



Enemies in Agreement: Domestic Politics, Uncertainty, and Cooperation between Adversaries

Citation

Vaynman, Jane Eugenia. 2014. Enemies in Agreement: Domestic Politics, Uncertainty, and Cooperation between Adversaries. Doctoral dissertation, Harvard University.

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Enemies in Agreement:
Domestic Politics, Uncertainty, and Cooperation between
Adversaries

A dissertation presented
by
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to
The Department of Government
in partial fulfillment of the requirements
for the degree of
Doctor of Philosophy
in the subject of
Political Science
Harvard University
Cambridge, Massachusetts
July 2014

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Domestic Politics, Uncertainty, and Cooperation between Adversaries**

Abstract

Adversarial agreements, such as the nuclear weapons treaties, disarmament zones, or conventional weapons limitations, vary considerably in the information sharing provisions they include. This dissertation investigates why adversarial states sometimes choose to cooperate by creating restraining institutions, and how their choices for the form of that cooperation are constrained and motivated.

I argue that uncertainties arising out of domestic political volatility, which includes leadership changes or public unrest, make arms control agreements more likely because these moments create the possibility of foreign policy change. When states consider one another as relatively cooperative, increasing uncertainty about the adversary's security incentives leads them to hedge and pursue low monitoring agreements instead of relying on informal cooperation. Conversely, under highly competitive conditions, increased uncertainty makes states more willing to risk cooperation and form agreements with intrusive information provisions where no agreements were previously possible.

I show support for the theory through tests using an original data set of all adversarial cooperation agreements (1816-2007) and their provisions. Controlling for other determinants of arms control, I show that both types of domestic political volatility contribute to a higher likelihood of an agreement. As expected, the effect of volatility on types of information provisions is conditional on the prior relationship between the states. A detailed study of the Intermediate Nuclear Forces Treaty (US-Soviet Union, 1987) traces how shifts created by Gorbachev's new leadership contributed to greater uncertainty among US policymakers

about Soviet intentions, giving both sides the negotiating space to design an intrusively monitored treaty. I then demonstrate the generalizability of the theory across a wider range of cases by looking at the effects of domestic volatility on agreement outcomes for adversaries experiencing dtente; for those engaged in post-conflict competition, and for asymmetric powers negotiating new weapons limitation.

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Acknowledgments

Like any project that required many hours and many turns in the road, this dissertation would not have been possible without the support of people who have given me advice and inspiration.

I am grateful for the thoughtful and multifaceted guidance of my advising committee. Beth Simmons inspired me to focus the project on the questions about which I was most curious and I am grateful for her encouragement to cross-pollinate ideas and approaches from international relations subfields. Scott Sagan has continuously challenged me to look for the puzzle in any research question, which has been a source of inspiration for me for more than a decade. Iain Johnston has broadened my thinking about security studies from both theory and regional perspectives and his creativity has motivated me to investigate questions from new directions.

A number of other professors have helped me to make this project a blend of research approaches. Alex Montgomery was incredibly generous with his support of my work, discussing ideas and guiding me on methods and data. The dissertation has also benefited from discussions with Timothy Colton, Arthur Spirling, and Greg Koblenz. I am grateful to Frank Gavin for his commitment to promoting the work of young scholars; I have found tremendous support from him and the community he has built.

My years in Cambridge would not have been the same without the encouragement and positivity of my friends, Andrea Tivig, Serene Hung, Didi Kuo, Shahrzad Sabet and Chika Ogawa. Our dinners were the moments to celebrate successes, the spaces to vent, and ultimately a place for real help on all the elements of life that make research and writing possible. Didi Kuo and Serene Hung also read multiple chapters of this dissertation and I am grateful for their comments and countless edits.

Friends and colleagues have motivated new ideas for this project and helped me talk

through the undeveloped ones. Jonathan Renshon's support, feedback, and friendship over many years have been invaluable; there are few issues we have not discussed at one point or another. At the Harvard Government Department, I am grateful for advice from Richard Nielsen, Andrew Coe, Vipin Narang, Jeehye Kim and the participants of the IR workshop. While finishing this project in Washington DC, I benefited from feedback from Austin Carson and Tristan Volpe. I am grateful also to the Institute for Security and Conflict Studies at the George Washington University for welcoming me into its community.

My work has been generously funded by several organizations: The Paul and Daisy Soros Fellowship for New Americans, the Stanton Foundation, and the Weatherhead Institute at Harvard University. I have had the pleasure of conducting research for this project while in residence at the Council on Foreign Relations and at the Brookings Institution, and I am particularly grateful to senior fellows Frank Klotz at CFR and Robert Einhorn and Steven Pifer at Brookings. I am also grateful for the support of research assistants, particularly Ariana Rowberry, and librarians at these institutions for assisting me in getting great resources for this project.

As part of my research, I spent two summers at the Arms Control, Verification and Compliance Bureau at the US Department of State. I am grateful to numerous office directors, experts, and staff members for including me in their work and educating me on a diverse range of treaty negotiations and implementation details. Rose Gottemoeller has inspired so much of my interest in arms control issues. I am honored to have had an opportunity to learn from her both at AVC and previously at the Carnegie Moscow Center.

Chapter four on the Intermediate Nuclear Forces Treaty has in particular benefited from the generosity and insightful suggestions from a number of very knowledgeable individuals. Svetlana Savranskaya and David Hoffman helped me identify resources and contacts on the Soviet side of the story. Elizabeth Charles and James Graham Wilson shared with me not only their expertise and fascination with this historical time period, but also archival

resources they have collected in their own research. Tim Tulenko kindly included me in several INF Anniversary events in DC and helped identify key participants on the US side of negotiations. I am grateful to Alex and Rachel Vindman for their amazing hospitality during my trip to Moscow in June 2013.

This project would not have come to fruition without the support and encouragement of my family, who now know far more about arms control treaties than they ever planned. I am incredibly grateful to my mother Mila Epelbaum for her ongoing and inexhaustible support. More than anyone, she has always encouraged academic inquiry and has been my role model for lifelong curiosity about new topics and challenging ideas. She also helped this project directly in more ways than I can count, and I am grateful for her expert research skills, attention to detail, and patience with my Russian. My brother Igor Vaynman and I have always bonded over our mutual academic interests. I am thankful to have had the unique opportunity to connect with him on discussions of game theory, statistics, and the turbulent process of doing research. Igor's generosity, persistence, and unparalleled talent for teaching are evident throughout this dissertation. My husband Brian Nagendra has supported me through every stage of this project, with love and patience through every chapter draft, every fellowship application, and the unending pile of books on Gorbachev that took over our living room. He has given me confidence and encouraged me to follow my intuitions, and I aspire to be on his team as much as he has been on mine. This dissertation is dedicated to my father Izyaslav Vaynman, who believed in inspiration, elegant ideas, and a lot of hard work.

Chapter 1

Adversarial Security Institutions in International Relations

1.1 Introduction

Adversarial states compete for resources, power, and influence, but they also often cooperate to restrain that competition, using a variety of institutional arrangements. These institutions, which include both full fledged treaties and executive or military agreements, have the goal of restraining states' military capabilities or behaviors in order to mitigate the intensity or extent of security competition. Arms control is an alternative to status-quo conditions, increased arming, or conflict. Yet while pursuing arms control often appears to be a beneficial approach, through lowering costs of maintaining security or decreasing the possibilities of conflict due to misperception, states are often unable to come to an agreement.

The puzzle of arms control is not only in why it occurs relatively infrequently, but also why it is so varied in its form. In creating security agreements states include different kinds of provisions for exchanging information with their enemies, from extensive monitoring to barely self-reporting. However, while many scholars and practitioners believe that

agreements with monitoring and verification measures are more likely to be effective, some treaties fail to include these provisions. What explains the variation in information features in security agreements? Why are states sometimes able to create intrusive and highly enforceable treaties, but at other times appear to settle for less effective mechanisms? The goal of this project is to understand why adversarial states sometimes choose to cooperate by creating restraining institutions, and also why cooperation takes the form that it does, particularly with regard to how states share information.

Out of the wide array of security agreement types, from military alliances to multilateral security pacts, this project focuses on a particular category—agreements between adversaries. Adversarial cooperation is a broader concept than the familiar arms control of US-Russia nuclear reductions; agreements that limit the behavior of an adversary include conventional arms limitations, chemical and biological weapons prohibition treaties, war-termination treaties, demilitarization zones, and others. Cooperation happens between equally matched rivals, as well as between unbalanced enemies where agreements are essentially imposed on a weaker adversary by the winning side. In this sense, the Treaty of Versailles is an arms control agreement, as is the Biological Weapons Convention and the Nuclear Nonproliferation Treaty.

Unlike other kinds of agreements, arms control presents a particularly difficult area for cooperation, as parties have strong incentives to cheat and gain a relative advantage over the adversary. Even though all parties are better off cooperating with repeated interaction, at each moment members have incentives to sneak in a violation, or sneak in many. The dilemma in an adversarial relationship is how to maintain a cooperative solution while guarding against opportunistic defection. Information sharing treaty provisions, such as notifications of activities, rules on reporting, or even direct monitoring, can help resolve this dilemma by allowing states to observe and consequently respond to violations. But, these provisions simultaneously impose costs both in material resources needed to implement them

and also in making it more difficult to gain future advantages over an adversary.

This project draws from both the security studies literature and research on institutions and institutional design. I investigate international agreements that are in the “security” context in the sense that they address conflict or military threats, but which are also institutions in that they establish rules for repeated cooperation between states. As discussed in more detail below, this overlapping space has not been well investigated by previous scholarship, and this project brings a unique perspective by both taking an institutions lens with security agreements and focusing on information sharing as a distinct design feature of a treaty.

I seek to explain the variation in information sharing provisions across agreements by analyzing the trade offs between the benefits of cooperation, the costs of enforcing it, the advantages of being the state which cheats, and the risks of being cheated on. As developed in Chapter 2, I focus on the effect of uncertainty that one state has about its adversary’s incentive to cheat on an agreement. This uncertainty affects the form of the cooperation agreement these adversaries are able to reach. I then take one more step back, and consider the sources of these beliefs about the adversary. I argue that domestic political conditions in a state, particularly volatility that has implications for foreign policy, raise doubt about future compliance in the eyes of cooperation partners. Under conditions where states already expect strong cooperation incentives, the increased uncertainty leads to agreements with low level information exchange provisions rather than non-institutional forms of cooperation. However, under other conditions, such as in cases of particularly untrustworthy adversaries, higher uncertainty can create the opportunity for highly monitored agreements where no cooperation was previously possible.

My approach of looking at domestic conditions, their effect on beliefs, and the subsequent negotiating outcomes challenges several strains of the pervasive wisdom on arms control among policy practitioners. While a mainstream narrative on arms control design is

almost entirely lacking in the academic literature, policy makers fall into two general camps when it comes to theory on treaty occurrence and treaty design. The first camp believes that adversaries almost always want to cheat on agreements. The second group focuses on arms control as a process, and treaty design as a step by step advancement. Early agreements often have little information sharing, as both sides are afraid of intrusion and spying. However, as an agreement is implemented, adversaries gain trust in one another and future agreements can have deeper cooperation with more intrusive monitoring. States learn that monitoring provisions are not tools of spycraft that advantage the other side and are also effective in providing information on compliance.

A key implication of both existing understandings for arms control variation is that partners need to have good knowledge about one another's intentions in order to achieve the most intrusive kinds of monitoring treaties. Stability and predictability in what the adversary is likely to do are essential elements for states to be able to agree to and implement intrusive agreements. Either high monitoring is essential with known cheaters or it is only possible when states have learned about one another through a process of ongoing cooperation. In contrast, I argue that moments of uncertainty, brought on by domestic political shifts, make cooperation more likely. The highly intrusive agreements in particular are likely to emerge from very competitive conditions between states that become unclear. In this sense, less clear beliefs about the opponent's incentives for cooperation are more helpful for achieving arms control agreements than stability.

Chapter 1 proceeds as follows. Sections one and two elaborate the research questions and situate them within the existing scholarship on security cooperation and international institutions. Section three previews my explanation for agreement design variation, and outlines the methodology used in the rest of the project, including an introduction to the new arms control treaty dataset and historical cases.

1.2 Research Questions

In his well known article on other origins of war, James Fearon argued that war occurs when states fail to find the bargaining range for a peaceful resolution to their conflict due to incentives to misrepresent their capabilities and an inability to commit to an agreed upon distribution of benefits in the future.¹ One way to think about arms control is as a tool, in the form of institutionalized international rules, that states use to address these two challenges. First, although states still have an incentive to try to appear more powerful than they are in bargaining, by setting limits on weapons or military behaviors, arms control agreements make it more difficult for states to misrepresent their capabilities. Second, states will still have incentives to renegotiate the distribution of benefits if their power increases, and so are likely to back out of commitments. But, arms control treaties increase the costs from breaking established security bargains. Such costs can include facilitating timely and perhaps preemptive responses by adversaries, or revealing indications of an upcoming change before the state has reached a sufficiently powerful enough position to demand a new bargain.

If arms control agreements can provide these benefits, making it more likely that states will be able to find bargained solution to disputes, then why are they not more frequent? Therefore, the first puzzle is about the conditions under which states can employ arms control tools to mitigate the intensity of their competition, and when they fail to do so. Clearly, creating an institution like an arms control agreement is not cost-less, and comes with its own challenges. So when are the the trade-offs in institutional design likely to be preferable over the status quo of ongoing competition, arms racing, or even conflict?

A second and related question focuses on the forms of cooperation. In considering ways to restrain competition through institutional means, states should prefer to sign treaties which will be more effective at changing some current or future behavior of their adversary

¹James D. Fearon, "Rationalist Explanations for War," *International Organization* 49, no. 3 (Summer 1995): 379–414.

or altering the threat environment. Such treaties should deter participants from reneging, or at least allow participants to know when reneging has actually occurred so that they might respond. Arms control type of cooperation is after all a problem of prisoner's dilemma cooperation – all are agreements in which states promise not to pursue some course of action (arming or military behavior), which brings a short term military advantage in order to reap the benefits of lower arms racing longer-term.

However, we observe that often states sign agreements which provide few means to know whether the terms are being followed by the adversary. For example, the Biological Weapons Convention includes no provisions on observation or inspection, and voluntary reporting was only added to the convention later. The treaty itself adds no way to monitor or verify compliance, and to do so states would need to use their own national intelligence means. In addition, US and Russia have entered into a considerable number of arms control agreements throughout the Cold War and after, and while some of these agreements feature rigorous and costly monitoring provisions, others on similar issues do not. The kinds of agreements with the intrusive features we would expect to be most effective for observing compliance seem also to be the most difficult ones to negotiate and are not the only kind of agreement we observe.

If the general terms of an agreement are in mutual interest of both the states, why do they sometimes chooses weaker variants when it comes to information and consequently enforceability? Scholars and particularly policy makers believe that greater monitoring leads to more effective agreements. This logical assessment makes it particularly puzzling as to why states sometimes agree to arrangements which they know are likely to be less effective. Are there other trade-offs to be weighed against the benefits of an effective treaty? Further, even if its not the case that more information sharing leads to more effective agreements, we know that states still direct extensive resources and political attention to including certain provisions and creating agreements of a particular form. Yet, we know very little about how

those decisions are made and what factors influence the selection of particular features.

As I discuss below, a number of commonly suggested explanations can be quickly called into question, including the most popular answer from policy experts. Arms control experts and practitioners often suggest that some arms limitation challenges simply require more extensive monitoring because the weapons themselves are small and hard to detect. In other cases, information is simply too difficult to collect, so low monitoring options are all that is possible. However, a cursory look at the cases shows that there are plenty of situations where the nature of the problem was quite similar (in terms of the kinds of weapons being limited or the kinds of behaviors prohibited) but the information sharing provisions in agreements on those issues vary. For example, the Chemical Weapons Convention has highly intrusive monitoring and inspections, while the Biological Weapons Convention (BWC) barely calls on states to submit voluntary reports on their activities. Biotechnologies are smaller and more difficult to detect than chemical, but only marginally so. The fact that the Soviet Union was seriously concerned that its military bio program would get detected through inspections mandated for other, unrelated arms control treaties suggests that additional information provisions in the BWC could have at least been useful in detecting major violations.

As outlined in the following section, existing research on security cooperation and international institutions has not developed more sophisticated explanations for the information element in adversarial agreements. The gap in the literature provides an important opportunity for theory development.

1.2.1 Adversarial Relationships and Arms Control

Before delving into how researchers from both the security studies and international institutions literatures have approached the topic of adversarial cooperation, it is important to first note why *cooperative* relationships between adversaries present an important focus. First,

much of the security studies literature has been focused on observing and explaining conflictual behavior between states, even while clearly recognizing the importance of cooperation. Studies on how states use military force, arming, or alliances to respond to security threats are too numerous to cite. While there is plenty of theory on cooperation, there is much less research on the institutional form that cooperation takes - the treaties themselves.²

Second, because of their opposing interests and incentives, adversaries face the most severe cooperation challenges. The basic security interests of adversaries are competitive; an advantage for one state is a disadvantage for the other. The players are essentially in prisoner's dilemma; if each follows its best strategy, the players end up worse off than if they had cooperated. In discussing types of cooperation problems, Arild Underdall calls problems with these characteristics as "strongly malign."³ In seeking an advantage over the opponent, adversaries might threaten conflict or build up arms to protect themselves and increase the likelihood of prevailing in a military dispute. However, arms races are costly and inefficient, as is war. If war and arms racing is costly, states should have incentives for negotiated solutions⁴

Arms control agreements are mechanisms which help competing states establish a cooperative equilibrium. Arms control has been defined as: "limitations on the number or type of armaments or armed forces, or on their deployment or disposition, or on the

²On cooperation in security, see for example: Charles L Glaser, "Realists as optimists: Cooperation as self-help," *International Security* 19, no. 3 (1994): 50-90; Robert Axelrod and Robert O Keohane, "Achieving Cooperation under Anarchy: Strategies and Institutions," *World Politics* 38, no. 1 (1985): 226-254; Robert Axelrod and Robert O. Keohane, "Achieving Cooperation Under Anarchy," in *Neorealism and Neoliberalism: The Contemporary Debate*, ed. David A. Baldwin (New York, NY: Columbia University Press, 1993). On security institutions, see: Robert Jervis, "Security Regimes," *International Organization* 36, no. 2 (Spring 1982): 357-378; Celeste A. Wallander, Helga Haftendorn, and Robert O. Keohane, *Imperfect Unions: Security Institutions Over Time and Space* (Oxford, UK: Oxford University Press, 1999).

³Edward L. Miles et al., *Environmental Regime Effectiveness: Confronting Theory with Evidence* (Cambridge, MA: Massachusetts Institute of Technology Press, 2002), 56.

⁴Andrew Kydd, "Arms Races and Arms Control: Modeling the Hawk Perspective," *American Journal of Political Science* 44, no. 2 (Apr. 2000): 228-244.

use of particular types of armaments; arms control also encompasses measures designed to reduce the danger of accidental war, or reduce concern about surprise attack.”⁵ Thomas Schelling and Morton Halperin also call for a broad definition of term, focused on the goals of the agreements rather than their scope in terms of what is limited, reduced, or changed in capabilities. Schelling and Halperin include all military cooperation between “potential enemies in the interest of the reducing the likelihood of war, its scope and violence if it occurs, and the political and economic costs of being prepared for it.”⁶

The various goals that define arms control have been addressed by several kinds of treaties. When the goal of arms control is to increase mutual security, bolster deterrence, or increase stability by diminishing the possibility of offensive strikes, we see treaties that restrict fighting capability through placing limits on a specific weapons system or restrict offensive capabilities. For example, in her work on naval arms control between the World Wars, Emily Goldman identifies the treaty’s purpose as limiting an offensive weapon, the battleship, in order to increase mutual security between a group of adversaries - US, UK, France Italy, and Japan⁷ The Conventional Forces in Europe Treaty (CFE, signed in 1990) is an another good example of an agreement that limits offensive weapons and the kinds of deployments that would make a large scale first strike possible. Alternatively, treaties like the Antarctic Treaty and the 1972 Anti-Ballistic Missile Treaty are intended to limit the economic costs of preparing for a future conflict. With these treaties, states commit to not build capabilities they currently do not possess (in this case, military deployments in Antarctica and Missile Defense systems), as a resource saving and stability inducing measure,

⁵Coit.D. Blacker and Gloria Duffy, *International Arms Control: Issues and Agreements* (Stanford, CA: Stanford University Press, 1984).

⁶Thomas C. Schelling and Morton H. Halperin, *Strategy and Arms Control* (Washington, DC: Pergamon-Brassey, 1985), 2.

⁷Emily O. Goldman, *Sunken Treaties: Naval Arms Control Between the Wars* (University Park, PA: Pennsylvania State University Press, 1994).

only acceptable if the adversary does not build these capabilities either.

Most arms control agreements are negotiated between states, but they can also appear more as imposed by one state on another in an armistice or ceasefire agreement⁸ In these contexts, an agreement is still accepted by both sides as an alternative to continuing the conflict to a more final endpoint – the elimination of one of the states and acquisition of its territory by the other. The Treaty of Versailles is an often cited example of this kind of agreement in the arms control literature.⁹ Other post-conflict treaties which are less clearly dictated by the winner include the Korea Armistice agreement, which establishes a demilitarized zone between North and South Korea, or ceasefire agreements between Israel and its Arab neighbors, which provided for reductions of troops at borders and limits on armaments in border zones.

In addition to the traditional arms control treaties, my study includes confidence building measures (CBMs), consistent with the second part of the definition noted above.¹⁰ In establishing rules for communication or placing limits on military actions, CBMs are arms control on a smaller scale. CBMs do not carry the legal weight of treaties and they usually do not limit or reduce armaments. Rather, CBMs define rules of behavior of adversaries, limit their actions, and provide reassurance about ongoing military activities. In doing so the “are devices that increase predictability and reduce mutual suspicions, instability, and

⁸Jozef Goldblat, *Arms Control: A Guide to Negotiations and Agreements* (London, UK: SAGE Publications, 2002).

⁹Goldblat, *Arms Control: A Guide to Negotiations and Agreements*, see n. 8; Fred Tanner, ed., *From Versailles to Baghdad: Post-War Armament Control of Defeated States* (Geneva, Switzerland: United Nations, 1992).

¹⁰Though not all historical work on arms control includes CBMs, adding them is not a major point of contention. For example, in her work on confidence building, Emily Landau explicitly calls the Middle East CBM negotiations “arms control” and Jozef Goldblat identifies CBMs as a category of arms control measures. Emily B. Landau, *Arms Control in the Middle East: Cooperative Security Dialogue and Regional Constraints* (Portland, OR: Sussex Academic Press, 2006); Goldblat, *Arms Control: A Guide to Negotiations and Agreements*, see n. 8. On the goals of CBMs as reducing mutual fears of unintended escalation, see also Ariel E. Levite and Emily B. Landau, “Confidence and security building measures in the Middle East,” *Journal of Strategic Studies* 20, no. 1 (1997): 143–171.

perceptions.” Serge Sur, ed. *Verification of Disarmament or Limitation of Armaments: Instruments, Negotiations, Proposals*. New York, N.Y: United Nations, 1992, 178. Types of CBMs include: declaratory CBMs (Kellog-Briand Pact, US-Soviet Agreement on Measures to Reduce the Risk of Outbreak of Nuclear War), transparency measures (hotline agreements, notification of military activities agreements), and constraint CBMs (Incidents at Sea Agreement, exclusion or separation zones).¹¹ Though these agreements are often less ambitious goals than arms control treaties, they are characterized by many of the same trade offs in costs and benefits. For example, Marie-France Desjardins (1996) notes that some CBMs themselves have intelligence gathering purposes, while others intended to deal with “accidents” (namely the Incidents at Sea Agreements) actually address military behaviors that are intentionally aggressive and used by adversaries to gather intelligence or disrupt training.¹²

With all these types of adversarial cooperation agreements, a state that successfully cheats on an arms control agreement can stand to gain an advantage, such as greater military capabilities or the element of surprise in a first strike. Arms control agreements therefore present a particular category of cooperation for research: relative gains among participants, high incentives to cheat, but potentially high payoffs from long-term cooperation.

1.2.2 The Costs and Benefits of Information

Because of high incentives to cheat, information exchange plays a critical role in making an arms control agreement enforceable. Information sharing features in adversarial security agreements include rules about military or diplomatic exchanges, monitoring and verification procedures, rules on reporting or making information readily observable, or requirements

¹¹Ralph A. Cossa, *Asia Pacific Confidence and Security Building Measures* (Washington, DC: Center for Strategic and International Studies, 1995).

¹²Marie-France Desjardins, *Rethinking Confidence-Building Measures: Obstacles to agreement and the risks of overselling the process* (London, UK: International Institute for Strategic Studies, 1996), 11-12.

to provide details of domestic implementation of policy to international partners. These provisions have a number of roles they: (1) increase probability that a violation of the treaty terms is detected, (2) reassure both states that they are not being “suckered” by complying with agreement terms, (3) reduce perceptions about intents or capabilities of adversary. Information exchange can thus both allow for other provisions which limit threats or likelihood of conflict to be enforceable, and at times can also directly serve to reduce conflict.

The range of information exchange provisions can be broken down in a number of ways, but in general, possible measures start with low levels of intrusiveness and low levels of information exchanged and more towards intrusive measures which gather more information from the adversary. Chapter 3 goes into more detail on how I characterize different levels, from self reporting requirement to on-site inspections, but the relationship between what different measures accomplish and the costs they bring is important to lay out first.

Information sharing in an adversarial agreement comes with costs and benefits.¹³ The benefit is clear - more intrusive information sharing improves a state’s ability to detect violations of treaty terms. More intrusive provision can increase both the probability and the speed of detecting a violation. The faster a state can detect violations, the quicker it can respond by either calling on the adversary to cease the problematic behavior, or itself respond in kind and violate as well. The willingness of the opponent state to sharing of information reduces costs of getting that information through other means, such as intelligence.¹⁴ However, information sharing provisions may also require material costs to implement, such

¹³Kenneth W. Abbott, “Trust but Verify: The Production of Information in Arms Control Treaties and Other International Agreements,” *Cornell International Law Journal* 26 (1993): 1–58; Ronald B. Mitchell, “Sources of Transparency: Information Systems in International Regimes,” *International Studies Quarterly* 42, no. 1 (1998): 109–130; Lewis A. Dunn, “Arms Control Verification: Living with Uncertainty,” *International Security* 14, no. 4 (1990): 165–175.

¹⁴For example, one can argue that the US could gain the same information about the Russian nuclear arsenal through intelligence, without the monitoring provisions in bilateral arms control agreements. However, more resources would have to be devoted to intelligence to make this possible.

as hiring and training inspection teams, or placing satellites in orbit.¹⁵ Additionally, the more intrusive the information sharing, the more states risk that the other side will be able to collect sensitive information not pursuant to the agreement terms, which might weaken their military advantage.¹⁶ In fact, intelligence collection is a well known element of inspections and in US-Soviet agreements both sides clearly expected inspections teams to have intelligence gathering goals along with observing treaty compliance.¹⁷ In general, the more intrusive the information provision, the more costly it will be to implement, either through technology or personnel, and the higher the likelihood (and hence the cost) of other sensitive information being observed by an adversary.

There are often more important non-material costs to sharing information. First, non-material costs can include a “sovereignty cost” in perceptions of domestic or international actors that comes from allowing another party to enter the state’s territory. A government that agrees to allow an adversary on to its territory runs the risk of internal opposition for revealing too much to an enemy and appearing weak. Second, sharing information with an adversary diminishes the power to bluff about capabilities to get better concessions in a future dispute (even while it might decrease the probability that the dispute turns into conflict). With more intrusive information sharing, the costs that might be associated with

¹⁵Not all of the material costs associated with monitoring are necessarily incurred with the treaty, and for countries that have actually already invested in information collection technologies, signing a treaty that makes use of them may make that agreement relatively less costly. For example, military satellites have been used by the countries that possess them to monitor treaty compliance. While this makes some treaties less costly to implement for those states, the costs have in a sense been already incurred in building the satellites. Additionally, even when capabilities already exist, devoting them to often complex treaty monitoring purpose does incur a cost in intelligence resources not being used elsewhere. This is one reason why some treaties which call for non-interference with “national technical means” which essentially means that state cannot try to hide their capabilities from satellite surveillance, making it less costly to use intelligence resources for treaty observation.

¹⁶Schelling and Halperin, see n. 6, 103. For additional specific examples of extra information which could be collected by the USSR through intrusive inspections of US facilities, see: Dunn, see n. 13.

¹⁷This point has come up frequently in my conversation with treaty negotiators and members of inspections teams from the US-Soviet experience. An inspection is not a friendly activity, and that the other side would seek to collect extra information is often unspoken but an accepted reality.

not detecting a violation - in other words, being cheated on - are reduced. But, it also makes it more difficult to get away with the advantages of being the cheating side. Finally, even in cases with asymmetric monitoring, the side not being observed still bears higher non-material and material costs from more intrusive measures. In agreements such as the Versailles Agreement or the UN resolution ending the Gulf War, the losing side in the conflict bears the sovereignty costs of intrusive inspections, and sometimes also the material cost of implementing them. However, the other side faces the non-material cost of domestic and international backlash if the measures adopted fail to restrain the adversary. The cost of having been “duped” by an enemy and going for an arms control agreement rather than assuring compliance through military force, makes intrusive measures costly for the winner as well.¹⁸

In pursuing an arms control agreement, states have choices to make over what kinds of information sharing to include. Clearly, more is not always better, as there are costs to sharing too much. On the other hand, less information sharing might mean high risks of cheating and failed agreements. US policy makers saw these trade-off very clearly – in deliberating the provisions for a possible START Treaty with the USSR in 1988, then Secretary of State George Shultz noted that, “we will need to make a judgment on the balance of the intrusiveness of inspections we require and the impact of the intrusiveness [on] our own security.”¹⁹ In the chapters that follow, I combine material and non-material concepts to capture the general concept of costliness to high monitoring that comments like

¹⁸A similar logic applies in non-post conflict cases as well. In the 2013 US-Iran nuclear agreement, which I return to in more detail in chapter five, the US government faced very high costs from domestic backlash if it agrees to a high monitoring agreement that fails to restrain Iran’s nuclear program while giving the perception of mitigating the threat. In contrast, a lower degree of monitoring would arguably leave more questions about Iran’s activities, greater international attention to their future steps, and less of a chance that the US leadership would be blamed for a failure.

¹⁹Shultz is directly quoted in the committee meeting minutes: National Security Planning Group Meeting 176, “U.S. Options for Arms Control at the Moscow Summit,” Feb. 9, 1988, The Reagan Files. Note that the document states, “impact of the intrusiveness of our own security.” However, this phrase makes little sense, and the “of” appears to be a typo. There are several other obvious typos in the memo as well.

Shultz's reflect.

While some features of information exchange – such as “on-site inspection” – have become standard in contemporary discussion of treaties such as the 2010 New START agreement between the US and Russia, the core tools of collecting information about the compliance of the other side have been around for a long time. In the 1960s, US strategists envisioned ways to monitor the Soviets which the USSR would not agree to for decades to come, including on-site inspections of military installations, submissions of budgets and production inventories, aerial reconnaissance, or an international intelligence network to monitor violations.²⁰ Some of these are also similar to tools used to monitor the Treaty of Versailles.²¹ While others, such as the international observation network do not become a reality until the systems built for the Comprehensive Test Ban Treaty, which are in use today. However, the choice in the degree of intrusiveness for monitoring provisions is not for lack of imagination or knowledge. While capabilities to observe adversaries have surely improved with technology, the ideas on using intrusive means to gather information are not a modern phenomenon.

Throughout the thinking on information provisions, there is an important understanding that information gathered from monitoring of the other side would always be imperfect.²² Even the most intrusive measures leave the possibility that cheating could still occur in secret. The 1992 UNSCOM inspections of Iraq is a key example. Despite one of the most extensive inspections regimes ever implemented, there was still serious concern among US policy makers that Iraq was hiding capabilities or components needed to manufacture nuclear, chemical, or biological weapons. Perhaps such concern was not unwarranted, given the

²⁰Steven E. Miller, “Politics over Promise: Domestic Impediments to Arms Control,” *International Security* 8, no. 4 (Spring 1984): 67–90.

²¹These often include third party inspections and submissions of detailed records. For an interesting discussion on the similarities of tools used in a number of post conflict agreements across time, see: Tanner, see n. 9.

²²Schelling and Halperin, see n. 6, 93–94.

past experience of Germany seeking to circumvent the restrictions of the Versailles Treaty whenever they could.

The goal of this project is to explain the variation in information sharing provisions across agreements by analyzing the trade offs between benefits of cooperation, costs of enforcing it, advantages of being the state which cheats, and risks of being cheated on. I consider questions such as: under what conditions should we expect to see low monitoring agreements emerge? Under what conditions are only highly intrusive agreements possible? It is clear that agreement form should depend on numerous factors, such as how much it costs to monitor activities, or whether a defection from an agreement means a serious advantage or a relatively minor change in the overall military balance. However, it is far from clear how these factors interact, and which combinations allow for some kinds of agreement forms but not others.

1.3 Between Security and Institutions

While there is clear recognition in both the security studies literature and in institutional design research that information sharing in adversarial cooperation is an important area for inquiry, these agreement features have not yet been addressed in a comparative manner. For security studies, “monitoring” in arms control is usually addressed as part of negotiation challenges in a given agreement. While the security literature on arms control is vast, scholars usually focus on the nature or conditions of the competition between states, rather than on the institutional response the create in treaty text. At the same time, institutionalist scholars have so far focused more closely on economic or environmental agreements, where information provisions are not the first essential design element that comes to mind. Instead, features such as treaty membership or flexibly present more immediate opportunities for research. Information sharing is certainly on the agenda for institutionalists, but has yet

received extensive attention, perhaps in part because there have been fewer datasets of security oriented treaties. This project draws from both literatures and offers a new way of looking at security treaties as questions of institutional design.

From the security studies perspective, realists have sought to incorporate arms control behavior by states, but it plays a surprisingly small role. In his critique of structural realism, for example, Charles Glaser writes that although Waltz described states meeting their security needs through building arms, securing allies, and signing arms control agreements, the last of these three does not get equal attention and seems relegated to being very rare and only in peripheral areas.²³ Structural realists have also discounted arms control as being anything more than a codification of existing power balances because of the possibility of cheating on an agreement. However, these theoretical approaches often do not address the information tools which make cheating more difficult to carry out or quicker to observe.²⁴ For defensive realists like Glaser, arms control can help alleviate the security dilemma primarily because it allows states to coordinate an understanding of what constitutes as defensive or offensive capabilities, and so reduces incentives to respond to defensive moves by adversaries.²⁵ When it is distinguishable and states can observe the difference between offensive and defensive capabilities, they should prefer arms control. When it is indistinguishable and states are not clear whether they should prefer arms control or arms racing, Glaser argues

²³Glaser, “Realists as optimists: Cooperation as self-help,” see n. 2.

²⁴Classic works on arms control rather than international relations theory have gone further to identify the risk of cheating as being determined not only by state’s desires for an advantage but also by the advantages that cheating would give and the probability of detecting violations. On factors which contribute to risks in arms control, see: Schelling and Halperin, see n. 6; Antonia Handler Chayes, “An Inquiry into the Workings of Arms Control Agreements,” *Harvard Law Review* 85, no. 5 (1972): 905–969. For a discussion of these arguments: Charles L. Glaser, *Rational Theory of International Politics: The Logic of Competition and Cooperation* (Princeton, NJ: Princeton University Press, 2010), 128.

²⁵Whether the offense-defense balance is a cause or an effect of arms control is not entirely clear. Glaser argues that whether or not the offense-defense distinction in capabilities is distinguishable affects states’ interest in arms control. Charles L. Glaser, “The Security Dilemma Revisited,” *World Politics* 50, no. 1 (Oct. 1997): 171–201.

the outcome will depend on specific cases, specific forces of states, even different monitoring capabilities of states. Charles L. Glaser. "Realists as optimists: Cooperation as self-help." *International Security* 19, no. 3 (1994): 50–90. However, the logic could go the other way as well: because of the security dilemma, when it is very difficult for states to distinguish between offensive and defensive capabilities, they are even more motivated to pursue arms control to help them create those distinctions.

A vast literature devoted exclusively to arms control thrived from the 1960s but then largely faded by the mid-1990s.²⁶ Also, in the 1970s, the concept of arms control became narrowly associated with the attempts by the superpowers to negotiate legal reductions in nuclear arsenals.²⁷ Most of this work focused on the goals and inner workings of arms control in the context of deterrence theory, the threat of nuclear conflict during the Cold War, or arms control as strategy for limiting arms races. Some work has focused on specific arms control regimes, looking at sources of treaty provisions in one case, rather than comparing reasons for variation across cases.²⁸ While this literature includes more historical discussions of evolution in arms control agreements, there is little comparative analysis of why evolution

²⁶Some key examples of this work include: T.C. Schelling, M.H. Halperin, and T.C. Fund, *Strategy and arms control* (Twentieth Century Fund, 1961); Emanuel Adler, "Arms Control, Disarmament, and National Security: A Thirty Year Retrospective and a New Set of Anticipations," *Daedalus* 120, no. 1 (1991): 1–20; Abbott, see n. 13; Chayes, see n. 24; Robert Jervis, "Arms Control, Stability, and Causes of War," *Political Science Quarterly* 108, no. 2 (1993): 239–253; George W. Downs, David M. Rocke, and Randolph M. Siverson, "Arms Races and Cooperation," *World Politics: A Quarterly Journal of International Relations* 38, no. 1 (1985): 118–146; George W. Downs and David M. Rocke, *Tacit Bargaining, Arms Races, and Arms Control* (Ann Arbor, MI: University of Michigan Press, 1990); Alexander L. George, Philip J. Farley, and Alexander Dallin, *US-Soviet Security Cooperation: Achievements, Failures, Lessons* (New York, NY: Oxford University Press, 1988); Steve Weber, *Cooperation and Discord in US-Soviet Arms Control* (Princeton University Press, 1991); Donald Wittman, "Arms Control Verification and Other Games Involving Imperfect Detection," *The American Political Science Review* 83, no. 3 (1989): 923–945.

²⁷Nancy W. Gallagher, "Bridging the Gaps on Arms Control," *Contemporary Security Policy* 18, no. 2 (1997): 1–24.

²⁸For example, on the Chemical Weapons Convention, see Thomas Bernauer, *The Chemistry of Regime Formation: Explaining International Cooperation for a Comprehensive Ban on Chemical Weapons* (Aldershot, England: Dartmouth Publishing Company Limited, 1993).

occurred, or why changes from one agreement to the next often do not seem linear.²⁹ Some of this research, along with ideas about norms and appropriate behavior, suggest an important alternative explanation for the variation in information provisions.

In contrast to arms control from the 1960s to 1980s, much of the recent “security cooperation” literature has actually focused on agreements between friends rather than agreements between enemies.³⁰ Numerous scholars have looked at the drivers and consequences of military alliances and collective security and security regimes.³¹ Here, some scholars have begun to address variation in alliance forms, particularly the degree of institutionalization mandated by an agreement.³² My project takes this emerging interest in forms of cooperation back towards arms control, which has not received the more recent comparative treatment that has been afforded to alliances.³³

Approaching from the other perspective, of arms control as institutions rather than as security tools, we see that adversarial agreements are occasionally addressed, but far less

²⁹Some work on changes in approaches to arms control has been done from the perspective of psychology and learning. See for example: George W. Breslauer and Philip E. Tetlock, *Learning in US and Soviet Foreign Policy* (Boulder, CO: Westview Press, 1991).

³⁰One recent exception is Blum (2007), who looks at select moments of cooperation between rival states. Blum argues that these agreements, which develop outside the core issues of the conflict, can serve to manage conflictual relations, but does not provide a theoretical framework for understand when they emerge or the form they take. Gabriella Blum, *Islands of Agreement: Managing Enduring Armed Rivalries* (Cambridge, MA: Harvard University Press, 2007).

³¹For a review on alliances see: Glenn H. Snyder, “Alliances, balance, and stability,” *International Organization* (1991): 121–142. On collective security and security regimes: Richard K Betts, “Systems for Peace or Causes of War? Collective Security, Arms Control, and the New Europe,” *International Security* 17, no. 1 (Summer 1992): 5–43; Jervis, “Security Regimes,” see n. 2; Robert Jervis, “From Balance to Concert: A Study of International Security Cooperation,” *World Politics: A Quarterly Journal of International Relations* 38, no. 1 (1985): 58–79.

³²B.A. Leeds and S. Anac, “Alliance institutionalization and alliance performance,” *International Interactions* 31, no. 3 (2005): 183–202.

³³The lack of attention on adversarial agreements, as compared to alliances, is perhaps in large part due to the availability of large-n datasets on alliances, and no such counterpart for arms control. The new ATOP dataset further expands codings of alliances, providing a rich resource for new work. As discussed in the research design section below, this project attempts to start a similar data collection for adversarial agreements.

prominently than trade agreements. A few notable exceptions of insitutionalist work on security focuses on alliances, primarily NATO.³⁴ In her survey of scholarship on compliance with international institutions, Beth Simmons reviews recent work on “War Fighting, Peace, and Security” but the studies she notes focus mostly on alliances, to a lesser degree on laws of war, and then also a few studies on treaties for the protection of civilians and the International Criminal Court.³⁵ There is no mention of adversarial cooperation agreements such as the nuclear arms limitation treaties or disarmament treaties.

Scholarship on institutions has developed along the lines of several broad questions (roughly in chronological order): why do institutions form, what do they do, why do they matter, and most recently, why do they take different forms.³⁶ Liberal institutionalists argue that states form institutions in order to maintain mutually advantageous solutions to cooperation or coordination problems. Institutions matter because they change the incentives of states to pursue cooperative behaviors.³⁷ In contrast, realist scholars argue that institutions are merely a reflection of power distribution in the system.³⁸

³⁴David A. Lake, “Beyond Anarchy; The Importance of Security Institutions,” *International Security* 26, no. 1 (Summer 2001): 129–160; J.S. Duffield, “International regimes and alliance behavior: Explaining NATO conventional force levels,” *International Organization* (1992): 819–855; Andrew Kydd, “Trust Building, Trust Breaking: The Dilemma of NATO Enlargement,” *International Organization* 55, no. 4 (2001): 801–828; David H. Bearce, Kristen M. Flanagan, and Katherine M. Floros, “Alliances, Internal Information, and Military Conflict Among Member-States,” *International Organization* 60, no. 03 (2006): 595–625; Wallander, Haftendorn, and Keohane, see n. 2.

³⁵Beth A. Simmons, “Treaty Compliance and Violation,” *Annual Review of Political Science* 13 (2010): 273–296.

³⁶Michael J. Gilligan and Leslie Johns, “Formal Models of International Institutions,” *Annual Review of Political Science* 15 (2012): 221–243; Andreas Hasencleaver, Peter Mayer, and Volker Rittberger, “Integrating Theories of International Regimes,” *Review of International Studies* 26 (2000): 3–33.

³⁷Stephan Haggard and Beth A. Simmons, “Theories of International Regimes,” *International Organization* 41, no. 3 (Summer 1987): 491–517; Robert O. Keohane, *After Hegemony: Cooperation and Discord in World Political Economy* (Princeton NJ: Princeton University Press, 1984); Lisa L. Martin and Beth A. Simmons, “Theories and Empirical Studies of International Institutions,” *International Organization* 52, no. 4 (Autumn 1998): 729–757.

³⁸Stephen D. Krasner, “Regimes and the Limits of Realism: Regimes as Autonomous Variables,” in *International Regimes*, ed. Stephen D. Krasner (Ithaca: Cornell University Press, 1983).

This research project fits directly into the last question on institutional forms, which has been developing along multiple directions in recent years. In a volume on institutional design, Barbara Koremenos proposed five dimensions of institutional variation: membership, scope of issues covered, centralization of tasks, rules for controlling the institution, and flexibility of arrangements.³⁹ Other work in the vein of institutional design has also looked at institutional autonomy or independence,⁴⁰ and degree of legal bindingness.⁴¹ However, to date, most empirical analysis has focused on flexibility and membership provisions.⁴² In an edited volume, Acharya and Johnston look at regional variation in institutional design provisions, and while this work also includes some security related institutions (NATO, ASEAN Regional forum) the list of agreement design features the authors assess again does not address information provisions.⁴³

Some consistent findings in models of agreement design are likely to apply to the

³⁹Barbara Koremenos, Charles Lipson, and Duncan Snidal, "The Rational Design of International Institutions," *International Organization* 55, no. 04 (2001): 761–799.

⁴⁰Yoram Z. Haftel and Alexander Thompson, "The Independence of International Organizations," *Journal of Conflict Resolution* 50, no. 2 (2006): 253–275; Kenneth W. Abbott and Duncan Snidal, "Why States Act through Formal International Organizations," *Journal of Conflict Resolution* (1998): 3–32.

⁴¹Kal Raustiala, "Form and Substance in International Agreements," *American Journal of International Law* 99, no. 3 (2005): 581–614.

⁴²Barbara Koremenos, "Loosening the Ties That Bind: A Learning Model of Agreement Flexibility," *International Organization* 55, no. 02 (2001): 289–325; Barbara Koremenos, "Contracting Around International Uncertainty," *American Political Science Review* 99, no. 04 (2005): 549–565; Barbara Koremenos, "If Only Half of International Agreements Have Dispute Resolution Provisions, Which Half Needs Explaining?" *The Journal of Legal Studies* 36 (2007); B. Peter Rosendorff and Helen V. Milner, "The Optimal Design of International Trade Institutions: Uncertainty and Escape," *International Organization* 55, no. 04 (2001): 829–857; Amitav Acharya and Alastair Iain Johnston, *Crafting Cooperation: Regional International Institutions in Comparative Perspective* (Cambridge University Press, 2007); Jeffrey Kucik and Eric Reinhardt, "Does Flexibility Promote Cooperation? An Application to the Global Trade Regime," *International Organization* 62 (Summer 2008): 477–505.

⁴³This volume starts with the propositions of the Rational Design agenda and expands somewhat by adding new design feature outcomes and several new explanatory variables. The institutional design features the authors analyze across regions are: membership, scope (intrusiveness in domestic politics), rules, norms, and mandate. The determinants of institutional design are expanded somewhat to include type of cooperation problem, number of actors, ideology and identity, power distribution, domestic politics (regime type, ethnic conflict, state authority), non-state actors or other institutions, and geography. Acharya and Johnston, see n. 42.

security agreements, though it has not yet been clearly tested in that context. For example, scholars have shown agreements with flexibility, such as escape clauses, are more stable. With flexibility provisions states can acceptably violate an agreement under difficult circumstances and then return to compliance. This condition makes agreements both more likely to be signed, and more likely to be maintained over time.⁴⁴ Agreements with flexibility might also allow for deeper cooperation - states will be more willing to commit to greater constraints on behavior if they know that these terms can occasionally be violated.⁴⁵

Institutional design scholars have recognized that the information dimension has been under-explored. In surveying the rational design agenda, Andrew Guzman notes: “There is only a small literature on monitoring and review mechanisms, and virtually no discussion of why these mechanisms exist in some agreements but not in others. There does not appear to be any available explanation of why states do not use monitoring mechanisms more often to increase the credibility of their promises and why the mechanisms used are often weak.”⁴⁶ However, since Guzman’s assessment, little progress has been made in the study of information provisions, at least in part because of a dearth of work on security agreements as institutions. While understanding the role of flexibility provisions is still relevant, for security agreements the agreement design feature that raises the most serious questions is information. This is because it is the component most clearly connected with effectiveness, compliance, and the expected costs and benefits of cooperation. In the rare

⁴⁴George W. Downs and David M. Rocke, *Optimal Imperfection? Domestic Uncertainty and Institutions in International Relations* (Princeton, NJ: Princeton University Press, 1995); B. Peter Rosendorff and Helen V. Milner, “The Optimal Design of International Trade Institutions: Uncertainty and Escape,” *International Organization* 55, no. 4 (2001): 829–858; B. Peter Rosendorff, “Stability and Rigidity: Politics and Design of the WTO’s Dispute Settlement Procedure,” *American Political Science Review* 99, no. 03 (2005): 389–400.

⁴⁵Leslie Johns, “Depth Versus Rigidity in the Design of International Trade Agreements,” *Journal of Theoretical Politics* (Nov. 2013).

⁴⁶Andrew T. Guzman, “The Design of International Agreements,” *European Journal of International Law* 16, no. 4 (2005): 579.

cases where security scholars have noted the connection to institutional design, the focus has been on monitoring provisions as the key dimension of variation.⁴⁷

The role of information is a key dimension on which security and other kinds of institutions diverge.⁴⁸ Information sharing in the security context is in itself a costly behavior, even outside the context of institutions. Collecting information about military plans, or a military technology, is very important when the explicit intents of the adversarial state are to gain a relative advantage in capabilities. However, in agreeing to monitoring and revealing information about capabilities today, a state might give up its power to bargain or bluff in future confrontations. Because information shared under security agreements might affect military planning, military budgets, or civilian national defense systems, the “costs” are particularly high, both in terms of resources and in placing “national survival at stake.” In contrast, information sharing in trade or environmental agreements is rarely as costly to the parties. While a state might not want to reveal its domestic practices with regard to some environmental concern, doing so will likely not put the state’s survival at stake in the event of a dispute.⁴⁹ This qualitative difference in the costs associated with information sharing also means that in the security context, information sharing features may provide a way to signal credibility and commitment in a way that is unavailable in trade or environmental

⁴⁷For example, Kenneth Abbott linked his discussion of the information challenges in arms control to the verification design features states include in these agreements, identifying several conditions which should be associated with more intrusive provisions, such as lack of unilateral information collection tools. Abbott, see n. 13.

⁴⁸Bernauer, see n. 28, 219-220.

⁴⁹As Lipson notes, there is no threat of “immediate peril” in non-security issues. “The dangers of swift, decisive defection simply do not apply in most international economic issues. Timely monitoring is important but rarely vital since most economic actions are reasonably transparent.” Lipson argues that this is a reason for why cooperation is more difficult in the security sphere than in economics, but it’s also the reason why monitoring and information exchange provisions are more important in the security case, and why their variation is puzzling. It is notable that although Lipson’s article was published 20 years ago, there has not been much work on understanding this variation in information exchange provisions. Charles Lipson, “International Cooperation in Economic and Security Affairs,” *World Politics* 37, no. 1 (Oct. 1984): 1-37.

contexts.⁵⁰

The lack of focus on information provisions among institutionalist scholars may also be related to how they have addressed questions of compliance, often focusing on issues (such as ratification as credible commitment) that are more important for trade or human rights institution than for security agreements. There has been a lot of research on why states comply with international institutions, with contributions from realist, functionalist, and normative perspectives.⁵¹ The puzzle in this literature has often been around enforcement provisions, and why states comply without enforcement. However, in the security context, enforcement is most often not a punishment contained in the agreement, such as a sanction for violations, but rather the threat of a retaliatory defection, such as the development of new capabilities, a return to arms racing, or an escalation of a conflict. The status-quo was itself costly for adversaries engaged in security competition, so the return to it following an agreement failure can be a serious threat. In the cases of trade, environment, and human rights, retaliatory defections are either too costly for the state that would respond, or cannot deliver a targeted punishment against the prior defector.⁵²

With punishment to some extent implicit in security cooperation, the real compliance challenge in security agreements is in knowing whether punishment should be applied. Non-compliance can be difficult to observe, and states that violate an agreement try to hide their defections. In most cases, this difficulty in observing noncompliance is more acute in

⁵⁰In his work on the chemical weapons regime, Thomas Bernauer also points out that more generally, the incentives for defection from an agreement are higher in the arms control and disarmament contexts than in environmental contexts. With environmental issues, costs of defection are usually borne by complying and non-complying states equally, while in arms control higher costs are borne only by the complying state. Bernauer, see n. 28, 219.

⁵¹For good reviews of the compliance literature, see: Simmons, "Treaty Compliance and Violation," see n. 35; Beth A. Simmons, "Compliance with International Agreements," *Annual Review of Political Science* 1 (1998): 75–93.

⁵²George W. Downs, David M. Rocke, and Peter N. Barsoom, "Is the Good News about Compliance Good News about Cooperation?" *International Organization* 50, no. 03 (1996): 379–406.

the security context; the secrecy is usually intentional because one side has an interest in taking advantage of the other. From the security side of the literature, arms control experts often expect that cheating is rampant when it comes to security cooperation, and constant measures are needed to try and prevent it.⁵³ Missing in the current institutions literature on compliance is the idea that the form of the treaty – specifically the information provisions – can be a tool for improving compliance because it can heighten the likelihood of an effective response to violations.⁵⁴

Additionally, scholars in this literature have focused too much on incentives for cooperation or defection being a characteristic of the issue area or as related to relatively constant characteristics of states, such as regime type or normative beliefs.⁵⁵ Characterizing which type of state or which degree of cooperation is likely to have what kinds of defection incentives is of course important for gaining some expectations about the likelihood of cooperation, but the existing compliance literature does not address the uncertainty that states have about how the opponent views defection incentives. It can be unclear what the incentives for defection really are for any state – opponents may indeed be well intentioned cooperators or they might have high incentives for defection. For example, we observe variation in treaty behavior by states that have been democracies for a long time, or which we could see as having relatively stable normative beliefs. Alternatively, expectations of incentives in some issue areas are not always shared by both states. For example, the US expected

⁵³Steven E. Miller, “Arms Control in a World of Cheating: Transparency and Non-Compliance in the Post-Cold War Era,” in *A Future Arms Control Agenda: Proceedings of Nobel Symposium 118*, ed. Ian Anthony and Adam Daniel Rotfeld (Oxford, UK: Oxford University Press, 1999).

⁵⁴One notable exception is an article by Ronald Mitchell which looks at the role of transparency in treaties as a tool to increase compliance among private actors. However, Mitchell’s approach has not yet been extended to studying security institutions, or institutional design to observe intentional violations. Ronald B. Mitchell, “Regime Design Matters: Intentional Oil Pollution and Treaty Compliance,” *International Organization* 48, no. 3 (1994): 425–458.

⁵⁵Alternatively to the characteristic of the issue area, scholars distinguish between differences in the “depth” of the cooperation. Downs, Rocke, and Barsoom, “Is the Good News about Compliance Good News about Cooperation?” See n. 52.

cooperation with the 1972 Biological Weapons Convention in large part because it judged biological weapons as useless war fighting tools. So, the US saw defection as having little security advantage. The USSR had a different interpretation and cheated extensively on the treaty, launching a large military bio weapons program. The USSR expected noncompliance with the treaty, and thought that the US must be cheating as well.⁵⁶

In contrast to most institutionalist approaches, I start with a more classic arms control perspective and consider the situations where states can see different advantages from cheating. While one state that perhaps seeks to gain a territorial advantage could see a high advantage from failing to notify its opponent about troops building up at the border, a state that does not have such territorial ambitions would not see much gains in the same violation. Given the situation that both enforcement and cheating are possible, the interesting question is not why states comply or violate, but rather why they sometimes take different approaches in addressing the cooperation challenge through the form of the institution itself.

Comparing the approaches taken by both security studies and institutions scholars reveals an important gap in our understanding of security institutions. While the importance and existence of arms control agreements is well recognized in security, no theory has been identified to explaining when such agreements occur and the forms they take. At the same time, the literature that has devoted considerable focus to institutions and their forms has largely overlooked the contrasts presented by security institutions.

1.4 Explaining Agreement Design

I argue that states design different forms of treaties, including ones that seem weak or unenforceable, because of different beliefs they have about each parties' incentives to cheat

⁵⁶For an extensive history of the Soviet biological weapons program, which makes this point about Soviet expectations of US cheating, see: Milton Leitenberg and Raymond A Zilinskas, *The Soviet Biological Weapons Program: A History* (Cambridge, Massachusetts: Harvard University Press, 2012).

on an agreement. In the arms control context, states are trying to cooperate with a partner whose incentives and intentions are unclear. This factor of uncertainty forms the core part of my theory on the design of agreements. I argue that the degree of uncertainty states have about their opponents affects the types of information sharing provisions they include in cooperation agreements.

While we might generally believe that certainty about future cheating should matter in shaping a state's policies, it is not immediately clear how these beliefs would affect whether a state chooses more or less information sharing. In his work on trust and mistrust in security cooperation, Andrew Kydd considers a state's belief about the likeliness that an opponent will cheat and the effect this has on when states are able to cooperate.⁵⁷ However, this line of thinking should be taken a step further - the form of cooperation itself can include responses to those uncertain beliefs. When the cooperation is a negotiated treaty, states make agreements not only about cooperating in the first place, but also how each state observes the opponent during implementation of the pact.

Using a rationalist model, developed in chapter 2, I analyze the relationship between uncertainty of beliefs about the adversary and treaty design choices. I assume two general types of states - those with high incentives to cheat on an agreement, "Competitive types," and those with low incentives to cheat, "Cooperative types." I take a simple characterization of uncertainty; uncertainty occurs when there is low confidence in each state's ability to accurately assess incentives for cooperation. When there are two types of states, the highest uncertainty occurs when there is a 50% chance of facing a high incentive state and a 50% chance of facing a low incentive state.

Figure 1.1 illustrates the uncertainty concept. At either end of the spectrum, states are fairly sure of their beliefs, and have strong expectations that their adversary is a Co-

⁵⁷Andrew Kydd, *Trust and Mistrust in International Relations* (Princeton, NJ: Princeton University Press, 2005).

operator or Competitor type. In the middle, however, uncertainty is high. In this view, uncertainty is consistent with the concept of a change in beliefs towards a higher probability of a certain type of state. But also, it is a more general formulation because it characterizes the change as one towards the opposite direction of previously held beliefs, or towards the middle “50/50” region.

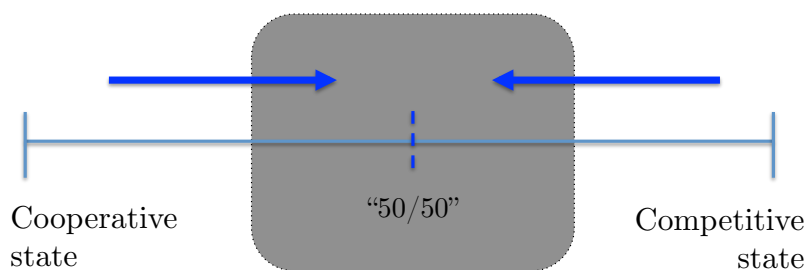


Figure 1.1: Beliefs about State Type

I show that when states are highly certain that an adversary has low incentives for cheating, and is thus very likely to honor the agreement, we should expect to see treaties with little information sharing. Here, paying the costs associated with sharing information would be unnecessary, since the opponent is expected to comply anyway. If uncertainty about these Cooperator states grows however, (increased probability they might be Competitor types after all), we would expect to see treaties with increasing levels of monitoring. In effect, states can hedge against the risk of cooperating with a cheater by paying for monitoring.

When states are highly certain that their opponent has high incentives to cheat and will likely shirk on the agreement, we should see no treaties at all (consistent with Kydd’s analysis). However, as uncertainty about these Competitive types increases, we should expect to see some treaties with high degrees of information exchange. In these cases, the benefits of cooperation are high, but there is now a minimally acceptable chance that the opponent

will cooperate after all. However, states need high degrees of information exchange to catch likely cheating. In other words, uncertainty actually allows for some kinds of agreements to happen where they might not have otherwise. As uncertainty about the Competitive type increases further, we should see agreements with decreasing levels of monitoring (moving from highly intrusive to medium monitoring for example).

Together, these predictions suggest that the degree of information provisions in an agreement depend on both the general nature of prior beliefs about the adversary, and the degree of uncertainty surrounding those beliefs. We should expect agreements with high monitoring to be rare and difficult to achieve, as the no agreement condition is often a close alternative in those cases.

1.4.1 Domestic Political Volatility as a Driver of Uncertainty

However, where does this uncertainty come from? What causes beliefs to change in this particular way, which is not simply a reassessment of likely behavioral but rather a factor that affects beliefs about the opponent in the opposite direction than was previously held? With an increase in uncertainty, beliefs change for the better or for the worse, depending on where they were before.

I argue that a key source of this kind of uncertainty is domestic political volatility. In particular, I suggest that this factor affects beliefs in a relatively sudden way, while other determinants of cooperation, such as resources, power balance or monitoring costs remain the same. Unlike these other possible determinants of treaties, domestic political conditions first and foremost affect the beliefs observers may have about that states security incentives, essentially what type of actor they are dealing with. As “volatility,” I am interested in events at the domestic political level which may give an international observer states a reason to think that its prior assessment about the opponent may no longer be accurate, or may not be accurate in the near future.

Out of possible determinants of treaty outcomes, or of uncertainty itself, from a research perspective it is particularly interesting to focus on the domestic politics drivers. From the international relations perspective, domestic factors have been used to explain the strength of international commitments, audience costs, resolve, military effective, and other foreign policy characteristics. On institutional design, domestic factors including legislatures and interest groups have been used to explain agreement flexibility, exit clauses, and renegotiation. In surveying institutional design across regions, Acharya and Johnston find that domestic politics was a common factor shaping agreements. Domestic political issues such as concern for regime legitimacy contribute to a preference for regional institutions which feature consensus-based decision making designs.⁵⁸

There has also been interesting research which suggests that it's not only the characteristics of domestic political systems that can have an effect on foreign policy behavior, but also the conditions of domestic volatility. The combination of interesting but mixed findings in this literature and the lack of application of these promising ideas to arms control cooperation motivates my focus on domestic volatility as a source of uncertainty.

For example, diversionary war theories suggest that domestic unrest can lead states to pursue international conflict as a way to distract from problems at home.⁵⁹ Responses to diversionary theory have suggested that difficult domestic conditions, such as public unrest or economic difficulties, may create greater restraint on leaders rather than motivation for distraction through use of force. Related studies have suggested that leaders may respond to

⁵⁸Acharya and Johnston, see n. 42.

⁵⁹The empirical findings on diversionary war hypotheses have been mixed. Some recent articles that lay out the debate include: Amy Oakes, *Diversionary War: Domestic Unrest and International Conflict* (Stanford, CA: Stanford University Press, 2012); Jaroslav Tir, "Territorial Diversion: Diversionary Theory of War and Territorial Conflict," *Journal of Politics* 72, no. 2 (2010): 413–425; John R. Oneal and Jaroslav Tir, "Does the Diversionary Use of Force Threaten the Democratic Peace? Assessing the Effect of Economic Growth on Interstate Conflict, 1921–2001," *International Studies Quarterly* 50, no. 4 (2006): 755–779; Sara McLaughlin Mitchell and Brandon C. Prins, "Rivalry and Diversionary Uses of Force," *Journal of Conflict Resolution* 48, no. 6 (2004): 937–61.

domestic pressures with a variety of foreign policies, including both diversionary force and greater degree of settlement on contested issues.⁶⁰

Mixed effects of domestic volatility have also been observed in non-security areas. McGillivray and Smith (2004) find that economic cooperation in the form of increased trade is affected by leadership changes, though the direction of the effect appears to depend on the nature of the trade relationship prior to the change.⁶¹ This work on the effects of domestic volatility has shown preliminary suggestions of a conditional relationship between prior relations between states and the effect that political volatility has on cooperation. My approach makes a further step in both theorizing and testing the conditional effect of domestic volatility, showing that it matters for agreement design choices rather than cooperation in general.

The interest in the effects of domestic politics or domestic volatility which we see international relations theory has been almost entirely missing in traditional security studies approaches to arms control. Even in the heyday of arms control analysis in the 1980s and early 1990s, there was little work on the role of domestic political factors and the limited work that was published focused on the dynamics of domestic political actors – such as within Congress – and their varied support for arms control treaties.⁶² In revisiting arms control

⁶⁰D. Scott Bennett and Timothy Nordstrom, “Foreign Policy Substitutability and Internal Economic Problems in Enduring Rivalries,” *Journal of Conflict Resolution* 44, no. 33 (2000): 33–61.

⁶¹Fiona McGillivray and Alastair Smith, “The impact of leadership turnover on relations between states,” *International Organization* 58, no. 3 (Summer 2004): 567–600. In another more security-oriented example, Weigand (2011) finds that “political vulnerability” – in the form of general strikes and major anti-government demonstrations – is positively associated with states seeking a settlement for territorial disputes, but the effect of other possible indicators of domestic pressures (such as economic growth rates) is mixed. Krista Weigand, “Territorial Dispute Settlement Attempts as Domestic Diversion,” Paper presented at the Annual Meeting of the American Political Science Association (September, 2011).

⁶²Miller, “Politics over Promise: Domestic Impediments to Arms Control,” see n. 20; Michael Krepon and Dan Caldwell, *The Politics of Arms Control Treaty Ratification* (New York, NY: St. Martins Press, 1991). For arms controllers, the role of domestic politics had been for the most part in challenges over treaty ratification rather than treaty design. For an interesting overview of the older arms control literature which shows a notable lack of studies on domestic factors, see: Dan Caldwell, *Bibliography on Contemporary Arms Control and Disarmament*, Brown University (Brown University, Providence RI: The Center for Foreign

from a new perspective, this project intentionally focuses on determinants of cooperation which also have been largely overlooked by traditional arms control scholars.

1.4.2 Alternative Explanations

I argue in this project that existing explanations provide an incomplete view of why arms control agreement vary in their information sharing provisions. Some existing explanations focus on slow changing underlying conditions which likely contribute to higher treaty propensity between states, but do not fully account for when different forms of treaties occur.

Arms control scholars often note that states are more likely to agree to arms control when their military capabilities are balanced and stable.⁶³ Stability in this view includes both a clear perception of the other side's capability, and a sense that those capabilities are not rapidly changing.⁶⁴ The advantages of parity are compelling; states that see a current or future advantage in capabilities would have fewer incentives for restraint, while their adversaries would be unlikely to trust them. On the other hand there are long periods of relative parity between adversaries where no agreements are signed. I argue that while parity can have an effect on making treaties overall more likely, a lack of stability in expectations of what the adversary intends is not the enemy of cooperation. While parity could also mean ongoing arms races, periods of uncertainty create the possibility that the state's relative military balance might be also maintained at a different, lower level.

The most compelling alternative argument, which I discuss in more detail in Chapter 2, suggests that arms control policy within particular states, and consequently the insti-

Policy Development, 1983).

⁶³Thomas Risse-Kappen, "Did Peace Through Strength End the Cold War? Lessons from INF," *International Security* (1991): 162–188.

⁶⁴Betts, see n. 31. Summarizing this realist style argument, Nancy Gallagher writes, "see legally binding arms control as a way to stabilize the strategic balance that only makes sense in a static security environment where potential threats are known, alignment patterns are obvious, and technological breakthroughs in unconstrained military capabilities are unlikely." Gallagher, see n. 27.

tutional design choices they make, is motivated by a process of learning and socialization. By participating in security institutions, states become socialized into the practices of those institutions, and this affects their policies going forward, both in terms of how they continue to engage in arms control or with regard to international cooperation more broadly.⁶⁵ Alastair Iain Johnston's argument on the effects of socialization on participation in security institutions can be applied to thinking about how socialization would be expected to affect states' approaches to creating different forms of security institutions.⁶⁶ Socialization could have two effects on states' approaches to adversarial cooperation agreements. First, states could become more likely to see institutions as legitimate or appropriate tools for addressing problems arising from security competition with their adversaries. They would be more likely to try negotiation and invest political resources in making proposals for agreements rather than preferring to rely on unilateral arms racing or military action. Second, states may become socialized not only into relying on institutions in general, but also in seeing certain institutional forms as accepted standards. High monitoring is therefore more likely.

My theory does not suggest that identity or cultural variables play no role, and while I do not address sources of belief formation in this project, such factors may have a strong effect in how states perceive one another's incentives for cooperation – essentially those baseline beliefs which states hold about their adversaries. Rather, I suggest that there are limited effects, if any, from prior exposure to adversarial agreements on the use of similar provisions in future cooperation. It may be faster and simpler for states to reapply complex

⁶⁵Breslauer and Tetlock, see n. 29; Jeffrey T. Checkel, "International Institutions and Socialization in Europe: Introduction and Framework," *International Organization* 59, no. 4 (2005): 801–826; Alexandra Gheciu, "Security Institutions as Agents of Socialization? NATO and the New Europe," *International Organization* 59 (Fall 2005): 973–1012; Alastair Iain Johnston, "Learning Versus Adaptation: Explaining Change in Chinese Arms Control Policy in the 1980s and 1990s," *The China Journal* (1996): 27–61; Alastair Iain Johnston, "Treating International Institutions as Social Environments," *International Studies Quarterly* 45, no. 4 (Dec. 2001): 487–515.

⁶⁶Alastair Iain Johnston, *Social States: China in International Institutions, 1980-2000* (Princeton, NJ: Princeton University Press, 2008).

monitoring and verification techniques they developed in prior agreements; they do not chose the treaty provisions simply based on their experience (or lack of experience) with treaty design, or even learning about the relative risks and costs of information provisions.

1.5 The Approach in this Project

The following chapters present my theory and several tests of its empirical implications. The theory is motivated by the characteristics of adversarial interactions and the role of information exchange in arms control, but it is deductively derived rather than bases on any specific observed case of cooperation. As noted above, I develop the theory in Chapter 2 with the aid of a simple formal model, which has two key benefits for the purposes of this project. First, this approach allows me to organize and evaluate the interactions of numerous factors which contribute to the costs and benefits of cooperation at the same time, a task that is complex and unwieldy without the assistance of mathematical model.

Second, by using stylized states in the form of “players” the model gives predictions for the types of agreements we should expect to arise under different conditions. Both classic treatments such as by Schelling as well as more recent work on cooperation in international relations have identified a number of the factors as important for determining when arms control will be preferable over arms racing or the status quo, including states’ uncertainty about what kind of opponents they are facing, the benefits of cooperation, risks of cheating, and variation in the ways that monitoring can be used to detect violations.⁶⁷ Chapter 2 develops a theory which takes these commonly recognized lists of factors a step further.⁶⁸ By explicitly modeling the relationships of these factors, I characterize the conditions un-

⁶⁷Glaser, *Rational Theory of International Politics: The Logic of Competition and Cooperation*, see n. 24.

⁶⁸Glaser’s study stops at *identifying* these factors and does not characterize the conditions of these variables under which we would expect arms control outcomes in general or arms control agreements in different forms.

der which different types of agreements emerge, and most importantly how that expected outcome would be affected by changes in conditions.

The model builds on prior game theoretic work on security cooperation by setting up a bargaining stage followed by an enforcement stage.⁶⁹ In assessing the effects of different conditions on cooperation outcomes, I focus in particular on change along one of the factors: a state's beliefs about the type of opponent they face. I look at the effect that increased uncertainty in these beliefs has on the form of monitoring provisions states agree to for arms control, with all other factors kept constant but still a part of the cost-benefit calculation for both players. Then, to better explore the sources of uncertainty, I move outside of the formal modeling context and focus on the role played by domestic political volatility within each of the cooperating states.

To test the theory, the project employs a dual approach, first looking at statistical evidence from all cases of adversarial cooperation and then tracing the causal logic proposed by the theory in case studies. The tests accomplish somewhat different goals. The large-n analysis in Chapter 3 allows for the test of probabilistic theory and measures effects that occur on average across the whole population of cases. This kind of testing also allows for multivariate analysis. While my theory identifies one previously overlooked determinant of treaty design, I recognize that other factors – such as costs of monitoring – likely play a role as well in making treaties or particular information sharing forms more likely. By incorporating these as variables in the statistical analysis, I am able to assess whether domestic volatility has a separate independent effect on treaty design which is in addition to the effects of other determinants.

While the failure to observe specific cases would not disprove the findings of large-n

⁶⁹I build primarily on James D. Fearon, “Bargaining, Enforcement, and International Cooperation,” *International Organization* 52, no. 2 (Spring 1998): 269–306.

analysis, case-based evidence lends them strong support.⁷⁰ The theory would be further supported by observed evidence of the predicted relationship between domestic volatility, uncertainty in beliefs, and treaty outcomes in at least some of the cases. The uncertainty of beliefs about the adversary is difficult to measure in the large-n analysis, but more evidence can be used to understand uncertainty through case study analysis. Most importantly, the case evidence can be used to show that the connections the hypothesized explanatory factors and the treaty outcomes are causal.

Chapters 4 and 5 compare several cases in modern arms control, using primary and secondary sources to assess the effects of political volatility on beliefs about the adversary and how those beliefs affected treaty negotiations. Chapter 4 on US-Soviet cooperation in the late 1980s uses a within-case comparison approach to compare a period where no cooperation is observed to one where the adversaries sign a high monitoring agreement. Across the sub-cases, other possible explanatory variables are largely held constant, while I show that the outcome is driven by uncertainty that arises out of a major leadership change between the two observation periods. Chapter 5 demonstrates the generalization of the theory to a broader range of cases by looking at adversarial agreements in South Asia and the Middle East.

Having outlined the research approach, I briefly preview the data and findings of each chapter.

⁷⁰Not all all observed treaty outcomes are driven by domestic political volatility, and of course not every case of volatility contributes to the formation of a treaty. It is possible that the effect that can be measured on average is very difficult to observe in individual cases. The problem of observation could be either because of the way historical data has been recorded or because some motivations and drivers of decision making are implicit for policymakers and not directly discussed in records of meetings or interview accounts.

1.5.1 A Preview of the Data and Large-n Analysis

While there is a detailed data set available on alliances and their forms, no such data has been systematically collected for adversarial security agreements. A key contribution of my project is an effort to remedy this lack of data. My survey of treaty compilations, the UN Treaty Database, government sources and other publications reveals about 250 treaties between adversaries, which include some arms control provisions, from 1800-present day.⁷¹ The collection used in Chapter 3 covers the full case universe of adversarial cooperation agreements, with perhaps only a few missing from the East Asia region. The agreements range in level of legality, from several which are mutual statements by parties, memorandums, and executive agreements, to full fledged treaties, which make up the majority of the collection.

For each treaty, I code the dependent variable – type of information sharing provision. A key dimension of variation in the dependent variable is quality of information (in amount or in credibility) that could be collected, which makes provisions both more revealing and more burdensome. Therefore, the categories of provisions reflect a judgment on the kind of information provided. I use ordered categories: no monitoring/information sharing, self-reporting, notification, monitoring, inspection. For the statistical analysis presented in Chapter 3, I further group these categories into low and high monitoring treaties, which creates the clearest distinction between treaty intrusiveness, costs, and the amount of information collected.

These treaty forms, along with a possible “no treaty” result are the dependent variable, which is modeled as a choice between three ordered outcomes. So for each pair of

⁷¹The most comprehensive compilation includes about 100 treaty texts. Goldblat, *Arms Control: A Guide to Negotiations and Agreements*, see n. 8. Scholars have also identified arms control provisions in the context of other work. For example, Virginia Page Fortna’s dataset codes the provisions of about 40 cease-fire agreements, including details on whether the agreement involved some form of arms limitation, embargo, or prohibition on specific weapons, as well as whether the agreement called for CBM measures, such as exchanges of military information, hot line, or on-site or aerial verification. Virginia P. Fortna, *Peace Time: Cease-Fire Agreements and the Durability of Peace* (Princeton University Press, 2004).

states in a given year, we could observe no treaty signed, a low monitoring treaty, or a high monitoring treaty.⁷² As we would expect, because arms control treaties occur infrequently, there are far more no treaty observation in the data. The data structure and distribution of observations closely parallels what we often see in large-n work on wars, which are actually somewhat more rare than arms control treaties. To capture the key independent variables, domestic political volatility and baseline beliefs about incentives for cooperation, I employ several measures, including instances of public protests and riots, executive and cabinet changes; and as a proxy for beliefs, new data on policy proximity based on UN voting patterns.

The quantitative analysis tests both a general hypothesis on the relationship between volatility and treaty outcomes, and conditional hypotheses which suggest that different treaty forms depend on starting beliefs states hold about one another's incentives. I find strong support for both sets of hypotheses. Controlling for other possible determinants of treaty design, domestic political volatility has a significant effect on the probability of a treaty, with an increase of about 150%. The magnitude of this effect is approximately on par with the effect from an ongoing arms race, which is unsurprisingly also positively associated with the likelihood of treaty outcomes. The effect of volatility on specific treaty forms is conditional on prior beliefs. I find that for states which believe each other to have high incentives to cheat (Competitive types), domestic volatility is associated with an increase in the probability of high monitoring treaties. However, for states which have beliefs of strong cooperation incentives (Cooperative types), domestic volatility does not make high monitoring more likely. As predicted by the hypotheses, the findings for effects on low monitoring treaties are the reverse. With Cooperative type states, domestic volatility makes low monitoring agreements more likely, but the effect does not apply to Competitive type states. Chapter 3

⁷²The details on how I converted data on treaties themselves into dyad-year observations are provided in Chapter 3.

shows that these findings are robust to a number of alternative specifications.

1.5.2 A Preview of the Cases

The first case is the strongest illustration of the dynamic laid out in the theory – as domestic political shifts in the USSR led to increasing uncertainty about incentives for cooperation, the US and Soviet Union were able to create a highly monitored agreement when one was previously not attainable. The 1987 Intermediate Nuclear Forces Treaty (INF) is the most intrusively monitored of all the US-Russia arms control agreements, and includes extensive on-site inspections by representatives from the other state. Within this study we also observe the negative case of a period with no treaty at all. In the period from 1981-1983, the US and USSR tried to negotiate an agreement, but failed to come to a mutually acceptable option. Looking at two close time periods in the US-Soviet relationship controls for the state actors, and to a large extent the specific agencies involved in negotiations. Relative power is also roughly constant across the cases, as is the bipolar international environment.

While other factors remain constant, in the second period of negotiations the shifts created by Gorbachev's leadership contributed to greater uncertainty among US policy makers about Soviet intentions. I show that as a result of this new uncertainty, the US became more willing to seek mutually acceptable – though still highly intrusive – monitoring provisions in an agreement. In the chapter, I document the evolution of decisions on the INF and its provisions, which occurred at the highest level of government in the US. From the Soviet side, the leadership change brought new positions on both cooperation and information exchange. However, Gorbachev and his advisors also looked for indicators that the Reagan administration was likewise serious about cooperation. The final form of the INF treaty is thus a reflection of both sides being willing to risk cooperation with an adversary they still believed to be highly competitive. Chapter 4 shows the INF treaty as a strategic bargain with compromises on both sides, and directly contrasts the treaty outcome against a period

where the same bargains and compromises were not reached.

The analysis in Chapter 4 relies on extensive primary source materials, including interviews and declassified documents from both the US and Soviet side. Many of the intelligence documents used have only become available to scholars in recent years. The end of the Cold War period has received extensive attention from both historians and political scientists. However, I use new material to reexamine and reinterpret the design of a security institution that emerges right at the beginning of the Soviet decline, before the historic shifts in power, ideology, and structure are either apparent or inevitable. Chapter 4 shows the INF treaty and its intrusive verification provisions as a strategic bargain with compromises on both adversaries, and directly contrasts the treaty outcome against a period where the same bargains and compromises were not reached.

The second case study chapter considers a different pairs of adversaries which design security agreements under alternate conditions. The goal of Chapter 5 is to demonstrate the generalizability of the argument across a wider range of cases. The cases selected show generalizability along three dimensions: outside the US-Soviet, cooperative rather than cooperative baseline beliefs, territorial and post-conflict disputes.

First, I look at cooperation between India and Pakistan, focusing on the Lahore Declaration of 1999 which established a framework for cooperation and a number of confidence building measures (such as missile test notifications) but does not include intrusive information exchange provisions. The chapter demonstrates that the low monitoring cooperation emerges out of period of detente between India and Pakistan, and focuses on issue areas where cooperative incentives were expected by both adversaries. The shift from informal cooperation to an agreement follows the political shift in the election of Indian Prime Minister, A.B. Vajpayee, which raised uncertainty about whether India's ongoing cooperative approach would continue in the future. In addition to testing the theory outside the US-Soviet context, this case allows for a particularly good evaluation of the alternative socialization and

learning explanation. India and Pakistan during the 1990s would be a “most likely case” for socialization. There was an intentional effort by US policy experts at this time to introduce Indian and Pakistani officials to the arms control accepted practice, including the forms of agreements, established by the US and USSR. So-called “track two” discussions were held on security cooperation, and options for different arms control tools and confidence building measure agreements (such as Risk Reduction Centers) were explicitly exchanged. However, it is puzzling that in “copying” measures from European arms control, India and Pakistan did not import the more extensive information sharing provisions that we see in the Organization for Security and Cooperation in Europe (OSCE) or other US-Russia agreements. I argue that socialization alone does not explain this key element of agreement design, and that despite learning about commonly accepted arms control tools, the two states still saw intrusive information exchange as too costly and unnecessary for their cooperation efforts.

Second, I discuss the 1979 Peace Treaty between Egypt and Israel. The agreement re-established peace following the 1973 war, and created a zone between the two states where armaments, troops, and military movement would be limited. The agreement created highly intrusive means gaining information on compliance with these commitments to restraint, including on the ground observation by monitoring from both parties and the UN. In this case, two sources of domestic political volatility play a role in the shift from limited diplomatic contact to a highly monitored treaty outcome. In Egypt, public unrest in the form of demonstrations and food riots motivated President Sadat to seek limits on military spending. His diplomatic outreach to Israel was seen by Israeli officials with a mixture of skepticism and guarded optimism. At the same time, elections in Israel brought to power Menachem Begin. The evidence shows that the leadership change increased uncertainty among Egyptian observers of Israeli incentives for cooperation, and created a possibility that compromise may be possible.

Finally, Chapter 5 addresses a contemporary case of adversarial cooperation, the

negotiations between the US and Iran on restraining Iran's nuclear program. The relationship has been fraught with high tensions and long standing beliefs on both sides that the opponent seeks not to cooperate but rather to use an agreement as cover for building nuclear weapons capability (Iran) or for undermining the adversary's political regime (US). I evaluate two moments when domestic political volatility increased uncertainty about Iran's intentions and contributed to a higher likelihood of an agreement. In the fall of 2009, following several months of massive public demonstrations in Iran, the US proposed a so called "fuel swap deal" which would delay Iran's ability to create weapons-usable nuclear material. The deal was almost accepted, but Iran walked away at the last minute, likely due to domestic pressure from hardliners. The summer of 2013 brought another domestic political shift in Iran, when moderate leader Hassan Rouhani was somewhat unexpectedly elected as President. US officials carefully observed this change, and the evidence shows an increase in uncertainty about Rouhani's security policies and capacity to enact real change. The Joint Plan of Action signed in November 2013 comes out of this period of heightened uncertainty and the increased possibility that Iran may intend to cooperate. The JPA is a temporary agreement, but one that significantly limits Iran's capability while it is in place, and includes highly intrusive information provisions that call for daily monitoring of key facilities. The case is still evolving, and details will continue to emerge over the next few years, which makes the assessment more speculative. However, it presents a unique opportunity to test the theory on a new instance of adversarial cooperation.

Importantly, all the case studies focus on perception of actors at the time they made decisions to pursue cooperation and made decisions on treaty forms, not on what we have learned about intentions in retrospect, or whether their understandings at the time were accurate. During the time periods when the states considered security institutions, what did they know about the foreign policy intentions of new leaders like Mikhail Gorbachev, Menachem Begin, or Atal Bihari Vajpayee when they came into power in the adversary

state? I show that at the time, these political shifts brought uncertainty and not necessarily expectations of a turn towards cooperative approaches. Gorbachev is a particularly important case in point. Today, we are familiar with the image of Gorbachev as a “new thinker” whose fundamentally new ideas changed Soviet international and domestic politics. However, this new thinking and pro-Western turn was far from apparent when Gorbachev first rose to power, and the Intermediate Nuclear Forces Treaty comes about during a moment of uncertainty about future Soviet intentions rather than a clear belief about Gorbachev’s intention to cooperate with the US.

1.6 Conclusion

Yitzhak Rabin is famously quoted as saying, “Peace is something you make with your enemies, not with your friends.” I designed this project around the observation that making peace, either following conflict or in an attempt to prevent it, often involves the use of security institutions. Yet, we know surprisingly little about the conditions when such solutions are possible or the forms that they are likely to take. Like war and militarized conflict, adversarial agreement design is a multicausal process, with several important determinants and a number likely explanations for the outcomes we observe. In this project, I focus on the role of uncertainty about states’ incentives for cooperation as a key factor in understanding adversarial agreements.

Leveraging the full body of arms control experience to inform our understanding of adversarial cooperation contributes to both conducting future research on international institutions and assessing contemporary policy challenges. First, by bringing an “institutions” lens to what has traditionally been a solely security topic, my project suggests other opportunities for research at the intersection of these two literatures. While here I focus on inter-state adversarial security agreements, the study could be extended to situations where

the threat comes not from another state but from non-state actors. Cooperation to address issues like terrorism, piracy, or smuggling often calls on states to share information in coordinating their behaviors, but there are also strong incentives to limit the extent of this information sharing. My theory and findings on the design of inter-state agreements may have interesting applications to transnational security institutions.

Finally, as I discuss in more detail in the conclusion (Chapter 6) another important step for future research will be on the connection between agreement design choices and the effectiveness of agreements. Both scholars and policy experts have strong expectations of some provisions being associated with effectiveness, such as with the case with monitoring provisions that allow states to observe compliance. These expectations both logical and often appear to uphold in individual cases. However, effectiveness has been very difficult to measure and thus the precise role of treaty forms has not been established. Drawing on the theory and findings of this project, I suggest several ideas for how research on effectiveness could be pursued in the future.

In last chapter, I conclude by identifying several implications of my research for contemporary policy debates. Policymakers continue to care about arms control today because they repeatedly encounter situations where an agreement can be an alternative to use of force or where there are pressures to reduce budgets for military spending and arms races. In 2013 alone, agreements arose to address the Iranian nuclear program and Syria's chemical weapons capabilities. Despite skepticism and concerns about cheating, in June 2014, Syria transferred the last of its known chemical stockpile to international partners for elimination. While negotiations on strategic nuclear reductions between the US and Russia have stalled, many policy experts agree that efforts are likely to restart in the future, either in a bilateral or multilateral context. The questions of when future adversarial institutions are more likely to emerge and what information exchange provisions will be acceptable are as much matters of policy debate as they are of academic inquiry.

Chapter 2

Treaties Under Uncertainty: A Theory of the Domestic Political Determinants of Agreement Design

2.1 Introduction

When asked about arms control agreements, policy-makers and treaty negotiators often say that each situation is unique. In many ways, they are not wrong. Each treaty negotiation brings a new set of trade-offs between what can be gained from cooperation, how much will be lost if it fails, and how costly the cooperation is to enforce. As discussed in the introductory chapter, scholars and policymakers routinely focus on only a couple of these trade-offs: how verifiable a treaty will be, and what resources are needed for monitoring, how some technologies enhance observation. Most discussions of adversarial security cooperation overlook the nature of the adversary. Policymakers rarely articulate how their beliefs about the opponent inform the formation of agreements they negotiate. At the same time, many will quickly and ambiguously note that domestic political conditions are a key factor for

arms control agreements.¹

To better understand domestic politics as a determinant of treaty design, it is necessary to develop a theory which systematically incorporates benefits, costs, and uncertain beliefs on both sides of an arms control agreement. The literature and practice have not explained how the determinants of security treaty conditions, both domestic and international, interact with one another. Because these factors create many permutations, each situation can appear unique even to treaty negotiators working on their third or fourth negotiation. In the second half of the chapter, I develop the idea that volatility in domestic politics is a key source of uncertainty for foreign policy.

I argue that the degree of uncertainty states have about their opponents affects the types of information sharing provisions they include in cooperation agreements. Uncertainty actually allows for certain kinds of agreements to happen. While we might generally believe that certainty about future cheating should matter in shaping a state's policies, it is not immediately clear how these beliefs would affect whether a state chooses more or less information sharing. How do beliefs interact with other costs and benefits involved in cooperation, such as advantages in avoiding arms races, the security benefits some weapons technologies such as nuclear weapons can provide, or the material costs associated with implementing a monitoring regime?² In this chapter, I incorporate these consideration into a

¹This observation is based on the author's many candid conversations with current and former arms control officials, conducted while a Stanton Fellow at the the Council on Foreign Relations in Washington DC (2012-2013).

²Some of these key variables have been identified in other studies, but as individual factors rather than interactive considerations. Miller (1999) lists possible reasons for agreements with few information provisions, including: cheating being militarily insignificant; non-material benefits from cooperation (reputation, agenda setting for future interactions, building consensus on international law); and low verification agreements having deterrent effects. Steven E. Miller, "Arms Control in a World of Cheating: Transparency and Non-Compliance in the Post-Cold War Era," in *A Future Arms Control Agenda: Proceedings of Nobel Symposium 118*, ed. Ian Anthony and Adam Daniel Rotfeld (Oxford, UK: Oxford University Press, 1999) See also Lipson (1993) for a discussion of the idea that some cheating might be meaningful in terms of the security balance, and some might be inconsequential. If it takes a long time to achieve a substantial defection, monitoring should be less important, and we should see more agreements. Charles Lipson, "International Cooperation in Economic and Security Affairs," *World Politics* 37, no. 1 (Oct. 1984): 1-37.

theoretical framework that formalizes their relationships.

The chapter proceeds in three main sections. Section 1 first outlines the general framework of the theory, identifying the pathway from A) domestic political conditions to increased uncertainty about cooperation incentives to B) the impact of these beliefs on treaty design. Focusing first on the second step of this pathway, I develop a formal model to highlight the specific effects of beliefs about the other state on the kind of agreement states are able to negotiate while at the same time clarifying the relationship between other possible determinants of treaty design. Section 2 takes a step back to identify possible sources of uncertainty and changes in beliefs, and develops my theory on how domestic political volatility can increase uncertainty about security incentives both due to leadership and elite level change and through public pressure on the government. Finally, Section 3 presents an alternative explanation based on socialization for acceptance of commonly used treaty tools, especially intrusive monitoring provisions. The conclusion outlines the empirical implications of the theory, which are tested in the following chapters.

2.2 A Model of Treaty Design

Figure 2.1 shows a thematic of the theory developed in this chapter. My argument focuses on the pathway from domestic political volatility, to its effects on uncertainty in beliefs, to the impact of that change on agreement design. There are other pathways and effects as well, and as the figure suggests, there are multiple sources of uncertainty, as well as other factors which affect agreement design not due to beliefs. While not the focus of this analysis, these other determinants of treaty design suggest further opportunities for research on the conditions under which they might play a role, or the degree of their influence.

In the next chapter I develop the case of the Intermediate Nuclear Forces Treaty in greater detail, but it is useful to preview the results of the case here in order to illustrate

the theory. The US and USSR had engaged in negotiations on a treaty to limit intermediate missiles in the early 1980s, but were unable to come to an agreement. Both sides believed the other had high incentives to continue arms build-up, particularly if the other failed to do so. President Gorbachev's rise to power presented a situation where the government was not overthrown or replaced, the regime type remained the same, but at the same time significant domestic reforms were put in place, key leadership positions in the party and cabinet shifted, and the new leader himself seemed to exhibit different attitudes towards foreign countries than his predecessors. The shifts created by Gorbachev's leadership contributed to greater uncertainty among US policymakers about Soviet intentions, and created the perceived possibility that the Soviet Union may be willing to cooperate on arms control rather than try to cheat on an agreement. The Intermediate Nuclear Forces Treaty, one of the most intrusively monitored arms control agreements between the US and the USSR, emerges out of this period where greater uncertainty makes it possible for the states to accept a very high degree of information exchange.

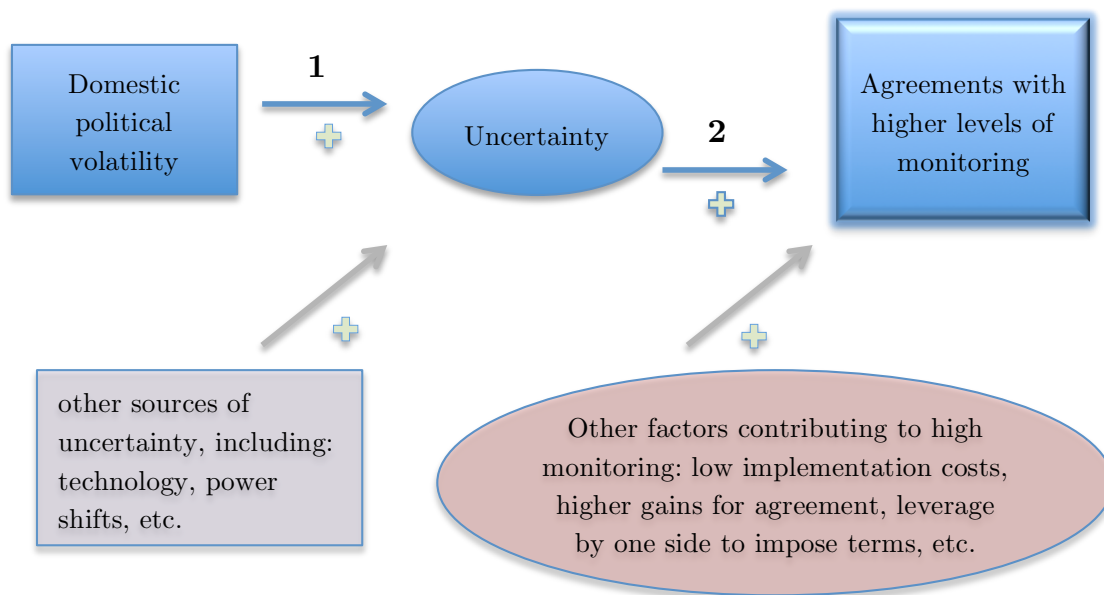


Figure 2.1: Theory outline

I start by focusing on the second arrow: the relationship between uncertainty about the intentions of the opponent state and the agreement form that is selected. To disentangle the various calculations that affect treaty design choices, I use a formal model that simplifies the interaction between two states. The goal of the model is to identify the condition under which we see treaties with high degrees of monitoring, low degrees of monitoring, or even no treaties at all.

I use a formal model for two reasons. First, the formalization guides and organizes an analysis which would otherwise be imprecise and convoluted. While it's easy to see that elements such as benefits of cooperation vs costs of monitoring should be an important trade-off, it is more difficult to combine them with a host of other likewise clear relationships, such as the trade-off between the benefits of cooperation vs the status quo. Even more difficult to include (though not impossible) is the idea of probabilistic beliefs about the adversary. The model records and structures all these relationships and keeps them consistent throughout various changes in conditions. As will be clear in the following section, the model does not introduce any dynamics that would be unfamiliar from a non-game theoretic treatment of the rational actor perceptive. The game I analyze does make substantial advancements to existing models of treaty design, but it does so by changing the substantive focus of the model, not by introducing any alternate mathematical techniques or new types of assumptions.

Second, a formal model allows us to manipulate the conditions of a scenario, and consider the effects of changing one parameter while holding the others constant. While it uses multiple moving parts, the model is also highly tractable for formulating hypotheses, as detailed in the Comparative Static section. In addition, by its very nature, the model makes it impossible for us to erroneously focus on the interest of one state alone. Even if a treaty looks highly beneficial from the point of view of one state, it still must be accepted by the other in order to be signed and implemented. The formal approach used here places the interaction between states front and center - no treaty is possible unless it is in the interest

of both adversaries.

Finally, using a formal model allows me to be highly transparent about the kind of assumptions I am making –and not making– about adversarial cooperation. The assumptions, detailed below, necessarily depart from some of the real life dynamics of cooperation. However, they also capture most general relationships and trade-offs we observe in arms control, which are also the most important for treaty design choices. For example, I assume that more monitoring is costly. The assumption does not differentiate where these costs come from – they could be material (physical implementation) or ideational (threatening concepts of national sovereignty) – but simply defines the positive relationship. Similarly, the assumption of a rational unitary state deciding on agreements cannot reflect factors such as well-known tensions between the executive and Congress on arms control issues, or divisions within executive agencies on the wisdom of arms reductions. However, the simplification does capture the idea that states or actors within states are all concerned about the adversary cheating on an agreement, and under some conditions see benefits from cooperation while at other times might assess the non-agreement status quo to be advantageous. While the model cannot capture the intricacies of negotiations, it is intended to reflect the more general patterns of interests and security calculations that we do see in real world arms control.³

2.2.1 Defining “Uncertainty”

I define “uncertainty” as the property of a belief about the adversary that is characterized by a low confidence in the ability to accurately assess that state’s incentives for cooperation. Suppose that there are two types of states in the world, ones with high incentives to cheat on cooperation, and ones with low incentives to cheat. The highest uncertainty occurs when

³The model would also not be able to reflect some interesting situations where Congressional leaders seek more intrusive monitoring provisions than the executive branch, suggesting perhaps greater suspicions about the adversary, or a different calculation of benefits in domestic arming. For example, the US Senate has not ratified the Comprehensive Test Ban Treaty, even though the US abides by the testing moratorium.

a state knows the least about what kind of opponent it is facing. In other words, the highest uncertainty occurs when there is a 50% chance of facing a high incentive state and a 50% chance of facing a low incentive state. In contrast, a belief that the opponent is 90% likely to have high incentives to cheat captures a *low* uncertainty about the assessment - we are pretty sure the opponent does in fact have high incentives to cheat. The same is true for the belief that the opponent is 10% likely to have high incentives to cheat, which just means that the opponent is very likely to be the kind which has low incentives.⁴

The mathematical definition of this type of uncertainty is implicit in the model presented below, but I highlight it here for clarity. In the case of two types of states, beliefs can be summarized by the single parameter $p = Prob(Competitive - Type)$. While this single parameter characterization of beliefs, p , is very simple, it is important to remember that it represents a probability distribution. I define as “certain” the belief that the type of the other player is perfectly known, $p = 0$ or $p = 1$. The “uncertainty” of a belief is measured by the minimum distance of p from 0 or 1. When $p = .5$ we clearly have the maximum distance,

⁴Existing work on institutional design has focused on several types of uncertainty: (i) uncertainty about the type of the other player, (ii) uncertainty about the future state of the world, and (iii) uncertainty about the behavior of the other player. In her work on flexibility clauses in international agreements, Koremenos has mostly looked at uncertainty about the future state of the world, where in future periods there is a chance that a state’s payoffs from cooperation changes. Barbara Koremenos, “Loosening the Ties That Bind: A Learning Model of Agreement Flexibility,” *International Organization* 55, no. 02 (2001): 289–325; Barbara Koremenos, “Contracting Around International Uncertainty,” *American Political Science Review* 99, no. 04 (2005): 549–565; Barbara Koremenos, Charles Lipson, and Duncan Snidal, “The Rational Design of International Institutions,” *International Organization* 55, no. 04 (2001): 761–799. The kind of uncertainty that models characterize often has an impact on the findings. On different types of uncertainty and its effects see: Mark Fey and Kristopher W. Ramsay, “Uncertainty and Incentives in Crisis Bargaining: Game-Free Analysis of International Conflict,” *American Journal of Political Science* 55, no. 1 (2011): 149–169.

I take a different approach and focus on uncertainty about the type of the other player, where type is defined by different incentives for cheating, because this is the kind of uncertainty which is most directly addressed by information provisions in arms control agreements. States surely care about whether payoffs will remain the same in the future, but in designing security cooperation with adversaries the primary concern is whether the opponent will cheat on an agreement. For more on the concern about cheating, see the arms control literature reviewed in Chapter 1. In using uncertainty about state type in the model, I build on Ronald Mitchell’s conceptual work on agreement design, which focuses on how information provisions work under conditions of different types of states such as “intentional violators” vs. “committed conformers.” Ronald B. Mitchell, “Sources of Transparency: Information Systems in International Regimes,” *International Studies Quarterly* 42, no. 1 (1998): 109–130.

and uncertainty decreases in distance from $p = 0.5$. Graphically, the equation for uncertainty, $uncertainty = p - p^2$, would appear as an upside down parabola, with a maximum at .5 and minimums at 0 and 1.⁵

My characterization of uncertainty over types of states according to their cooperation incentives is consistent with some approaches in the realist tradition in international relations, where some states are security seekers which aim only to guarantee their own survival while others are greedy states which seek to increase their power. Uncertainty about incentives is also uncertainty about whether the opponent is a security seeker or a greedy state trying to masquerade as a security seeker.⁶ Earlier work on arms control has also characterized uncertainty in this way, as a lack of information about the opponent's preferences.⁷

2.2.2 The simplified game

The formal model developed below illustrates the strategic interaction between two competing states trying to build a cooperation agreement. The key question is: As a state's beliefs and degree of uncertainty about its opponent change, what happens to the kind of monitoring it prefers in an agreement? How does this affect what kind of monitoring states are actually able to agree to in equilibrium? Thus the relationship (or comparative static) I am seeking to identify is what happens to monitoring as uncertainty changes, for fixed values of all other parameters.

⁵Uncertainty therefore is equivalent to the variance of the probability distribution characterizing the belief, which in the case of binary types is a simple Bernoulli distribution.

⁶Andrew Kydd, "Sheep in Sheep's clothing: Why security seekers do not fight each other," *Security Studies* 7, no. 1 (2007): 114–155.

⁷Kenneth Abbott (1993) discusses the information problem in the arms control prisoner's dilemma as states not knowing their opponent's values for gains of cooperation or reward for unilateral. Though Abbott does not model the uncertainty, in his conceptual framework the implication of uncertainty is that players do not know whether they are playing a game that looks more like coordination (Stag Hunt) or more like a Prisoner's Dilemma. I develop a similar concept formally in my game set up below. Kenneth W. Abbott, "Trust but Verify: The Production of Information in Arms Control Treaties and Other International Agreements," *Cornell International Law Journal* 26 (1993): 1–58.

In the model, two states bargain over their preferred monitoring provisions for the treaty, and in doing so think ahead to how that treaty will be implemented. However, states do not know what type of opponent they are facing, the kind that has strong incentives to cooperate, or the kind that has even stronger incentives to cheat. If playing with a “cooperator” type, the payoffs for both players resemble a coordination game, and both are better off cooperating than cheating. However, if playing with a “competitor” type, the game resembles a classic prisoner’s dilemma, where in the short term each player gains an advantage from defecting while the other cooperates, though both are better off cooperating in the long run.⁸ States negotiate a treaty that balances the benefits of having a cooperative agreement with the risk of being suckered by an adversary.⁹

The model includes a bargaining stage and an implementation stage. I take inspiration from a number of studies which use a two stage approach where the signing of a treaty depends on expectations on how or whether it will be implemented.¹⁰ The model extends similar research by introducing incomplete information about player type, imperfect public monitoring of moves, and bargaining over the treaty form rather than the distribution of

⁸Robert Axelrod and Robert O. Keohane, “Achieving Cooperation under Anarchy: Strategies and Institutions,” *World Politics* 38, no. 1 (Oct. 1985): 226–254.

⁹My distinction of player types as having different payoffs for defection is similar to Kydd (2005), though simpler. See Kydd (2005) p.30 for payoffs description, and p.32 on similar discussion of assurance game vs. prisoners’ dilemma game payoffs each type faces. Kydd focuses on the conflict alternative in defining the payoffs, so his two player types (security seekers and expansionists) have both different gains from conflict and a different probabilities of winning a conflict. Kydd’s approach allows for a good way to incorporate relative bargaining power between the states into the model. Because I introduce extra complexity in other parts of the game, namely in the problem of observing defections, I choose to simplify here and characterize types as just by having different exogenous payoffs. However the basic relationships I find between payoffs from cooperation or costs of noncooperation are consistent in their directions with Kydd’s model, which would be expected. Andrew Kydd, *Trust and Mistrust in International Relations* (Princeton, NJ: Princeton University Press, 2005).

¹⁰Brett Ashley Leeds, “Domestic Political Institutions, Credible Commitments, and International Cooperation,” *American Journal of Political Science* 43, no. 4 (Oct. 1999): 979–1001; George W. Downs, David M. Rocke, and Peter N. Barsoom, “Is the Good News about Compliance Good News about Cooperation?” *International Organization* 50, no. 3 (Summer 1996): 379–406; James D. Fearon, “Bargaining, Enforcement, and International Cooperation,” *International Organization* 52, no. 2 (Spring 1998): 269–306.

treaty benefits.

In the bargaining stage, states select a treaty with some level of monitoring, or states could simply not agree on a treaty. If states agree on a treaty provision, the game moves on to the implementation stage, which is structured as a two period game. States cooperate by abiding by the treaty terms, or defect by cheating. The monitoring provision that was chosen in the bargaining stage now affects how likely states are to get caught cheating.¹¹

To analyze the model, I start first with the enforcement game, and then go back to the bargaining stage. I first outline the model assumptions and the terms in both the enforcement and bargaining games:

Assumptions

1. Monitoring: Low monitoring means states are less likely to observe cheating by the other side than high monitoring. The monitoring level is equivalent to “how likely a defection is to be observed.”
2. Cost: Low monitoring is less costly than high monitoring. This might be a “cost” in terms of the resources involved to implement an intrusive monitoring measure, or something like a “sovereignty cost” if a state has to allow an intrusion into its territory.¹²

¹¹This set-up builds directly on Fearon (1998). The key differences are: 1) In Fearon’s model, states bargain over the distribution of benefits. In my model the distribution of benefits from cooperation is fixed. 2) Fearon does not include probabilistic detection of cheating. 3) In Fearon’s model, states have incomplete information about the payoffs for the status quo (“defect, defect” box). In my model, states have incomplete information about the opponent’s Type, which determines whether they are in a coordination game or a prisoner’s dilemma for the temptation payoff (“cooperate, defect” box). Fearon, “Bargaining, Enforcement, and International Cooperation,” see n. 10.

¹²Some monitoring measures can be costly in one sense but not in another. For example, we can look at monitoring of nuclear testing using seismic monitors. Monitors could be placed outside the subject state, without intrusion into territory (and the state in question does not even need to agree to them). On the other hand, a system of highly accurate motoring is still expensive to develop and deploy, as are methods of detecting radioactive materials released after a test. There are also limits to this “non-intrusive” observation - direct access to a testing site in North Korea, for example, would be more intrusive and allow observers to be more certain within a shorter period of time on key questions such as yield or materials used for a test.

3. Payoffs: States get a per-round payoff when the treaty is in place. The per-round cost of not having a treaty is the loss of benefits which would have come from having one for that round.
4. Different temptation payoffs: Different states can have different temptation payoffs for defecting. States can have either a high temptation payoff or a low temptation payoff. In the model, these are referred to as Competitive and Cooperative types respectively.¹³
5. Uncertainty: A state knows its own temptation pay-off, but it does not know the temptation payoff of its opponent. A state has a belief about the temptation payoff of its opponent, characterized as the probability that the other player is a Competitive type, α .
6. Constants: To simplify the model, several elements are held constant. The two players assumed to be symmetric including in their beliefs about the opponent. Monitoring applies equally to both players. Both players pay equal costs for monitoring. The payoff from cooperation is set and evenly distributed between the players.

2.2.3 Enforcement Stage

Incomplete Information: Player Types

At the start of the game, Nature randomly chooses the *type* of each of the players. The type of the player determines the player's temptation payoff in the Implementation Game, and each player can either be a Competitive (H) or Cooperative type (L). Let $\Theta_i = \{H_i, L_i\}$ be the set of types of player i , and let $(\theta_1, \theta_2) \in \Theta_1 \times \Theta_2$ be the types of players chosen by Nature. We assume that Nature chooses θ_1 and θ_2 independently. Players observe their own

¹³For notation clarity, Competitive types are designated as H for high incentives to cheat, and Cooperative types are designated as L for low incentives to cheat.

types, but not the types of the other player. Let α_i be the probability that Nature chooses $\theta_i = H$, and assume that (α_1, α_2) are common knowledge. A player's type is therefore his private information.¹⁴

The enforcement game set-up has three possible two period games: a coordination game (played if both players are Cooperative type), a classic prisoner's dilemma (played if both players are Competitive types) and a modified prisoner's dilemma (played if one player is a Cooperative type and one is Competitive). Note that with all finite period prisoner's dilemma games, the equilibrium outcome is Defect, Defect. In this case however, the possibility that states may actually be playing a coordination game against a Cooperative type makes cooperation outcomes possible. Both possible games have imperfect public monitoring. Both players have incomplete information about the other player's type.

The game boxes below show the period payoffs for each possible game. States' beliefs about the probability that the opponent is a Competitive type is equivalent to a belief about which of these games they are playing.

Competitive Type vs. Competitive Type - Prisoner's Dilemma

		Player $-i$ (H)	
		C	D
Player i (H)	C	r, r	$-l, t$
	D	$t, -l$	$-c, -c$

Cooperative Type vs. Cooperative Type - Coordination Game

Cooperative Type vs. Competitive Type - Mixed Defection PD

¹⁴The private signal from Nature at the start of the game differentiates this game from a standard public monitoring context, even though the rest of the signals are public.

		Player $-i$ (L)	
		C	D
Player i (L)	C	r, r	$-l, g$
	D	$g, -l$	$-c, -c$

		Player $-i$ (H)	
		C	D
Player i (L)	C	r, r	$-l, t$
	D	$g, -l$	$-c, -c$

Assume that $t > r > g > -c > -l$ to ensure that these are in fact prisoner's dilemma and coordination stage games. Assume also that $2r > t - l$ so that repeated mutual cooperation is the efficient outcome.

Let $A = \{C, D\} \times \{C, D\}$ be the space of pure action profiles, and let $a \in A$ be action profile. Let $u_i : A \times \Theta_i \rightarrow \mathbb{R}$ denote the stage game payoff function, so that $u_i(a_i, a_{-i}, \theta_i)$ is the stage game payoff for player i with type θ_i , under action profile (a_i, a_{-i}) .

Monitoring Structure

In the first period, players choose to cooperate or defect. The action is not observed publicly and a single $s \in \{\bar{s}, \underline{s}\}$ is generated and observed by both players. In this monitoring structure, the signal \underline{s} represents an observed defection.

The signals are generated by the distribution,

$$P(\bar{s}|a) = \begin{cases} 1, & \text{if } a = CC \\ 1 - p, & \text{if } a \in \{CD, DC, DD\} \end{cases} \quad (2.1)$$

$$P(\underline{s}|a) = \begin{cases} 0, & \text{if } a = CC \\ p, & \text{if } a \in \{CD, DC, DD\} \end{cases} \quad (2.2)$$

In this monitoring technology, the signal \underline{s} represents an observed defection. Also, there are no false positives of defection: $P(CC|\underline{s}) = 0$. Therefore if the signal \underline{s} is observed, it is known with certainty that at least one player defected.¹⁵ There are false negatives however. If there is no defect signal, that does not mean that no one cheated; it only means that no one was observed cheating. Importantly, in this monitoring structure, the probability of observing a defection signal is the same if one player defects and if both players defect.

Information sets

At the start of the first period, the history of each player includes only nature's choice, so there are two possible histories at the first node. Define $\mathcal{H}_i^1 = \Theta_i$, the set of information sets for player i in the start of period 1.

At the the start of the second period, the full history for each player includes the

¹⁵The lack of false positives is an important simplification to make the model tractable, and has the benefit of focusing substantive attention on the most important treat - an intentional violation. However, in arms control cases states are also often interested in avoiding mistaken evidence that there has been a violation. Such situations could exacerbate tensions between adversaries who start to blame one another for abrogating the agreement. See for example Schelling (1985) on false positives and false negatives in information provisions. A model can be constructed to account for this idea of "mistakes" in observation, but this would require a considerably more complex monitoring structure and would be best explored in future research. Thomas C. Schelling and Morton H. Halperin, *Strategy and Arms Control* (Washington, DC: Pergamon-Brassey, 1985), 9.

public signal, private action, as well as nature's choice. Let $\mathcal{H}_i^2 \equiv \Theta_i \times \{C, D\} \times \{\bar{s}, \underline{s}\}$ be the set of player i 's histories in the second period. Note that any $h_i^2 \in \mathcal{H}_i^2$ can be written as (θ_i, a_i, s) . There are 8 possible histories in the second node, plus 2 in the first node, for a total of 10 possible information sets in the full two stage game. Let $\mathcal{H}_i = \mathcal{H}_i^1 \cup \mathcal{H}_i^2$ the represent the full 10 possible information sets.

Strategies

A *pure strategy* for player i is a mapping $\sigma_i : \mathcal{H}_i \rightarrow \{C, D\}$, and a *behavior strategy* is a mapping $\sigma_i : \mathcal{H}_i \rightarrow \Delta\{C, D\}$, where $\Delta\{C, D\}$ is the set of probability distributions over $\{C, D\}$.

We restrict our analysis to strategies that depend only on the private signal of player type and the public monitoring signal, and not on the private action of the player. In other words, we assume that the action the player took in the first stage does not affect his calculation in the second stage.

We will focus on the following two familiar pure action-free strategies. The *Grim Trigger* strategy $\sigma_{GT} : \mathcal{S} \rightarrow \{C, D\}$ is defined as,

$$\sigma_{GT}(s) = D \text{ if } \underline{s} \in s, \text{ and } \sigma_{GT}(s) = C \text{ otherwise} \quad (2.3)$$

This strategy is a direct analog to the standard Grim Trigger strategy from perfect monitoring games, since in the assumed monitoring structure, the signal \underline{s} implies that some player must have defected. Therefore this Grim Trigger strategy only punishes true, observed defections.¹⁶

¹⁶I focus only on Grim Trigger strategies because the equilibria which can be maintained under this strategy are the “limiting cases on how much cooperation can be maintained.” Alastair Smith, “Political Groups, Leader Change, and the Pattern of International Cooperation,” *Journal of Conflict Resolution* 53, no. 6 (2009): 853–877. Cooperation is easiest to maintain under this strategy, so if we look at another strategy, such as tit-for-tat, we would be able have cooperation equilibria under even broader conditions.

Sequential Rationality in period 2

To assess equilibrium strategies, it is first helpful to understand what kinds of responses are rational in period 2 more generally. For the Competitive type, D dominates C in Stage 2, hence the only sequentially rational strategy for the Competitive type is to play D in stage 2. We will therefore from now on restrict attention to strategies in which the Competitive type always plays D in stage 2.

For the Cooperative type, the sequentially rational strategy after observing signal s will depend on the belief μ that the other player, $-i$, is the Competitive type.¹⁷ In the second period, Player 1 (i) believes that Player 2 ($-i$) is a Competitive type with probability μ and that Player 2 is a Cooperative type with probability $1 - \mu$. It is important to note that the belief here is denoted as μ rather than α , since the original belief α may have been updated after the completion of the first stage.¹⁸ The strategy of the other player is denoted as σ_{-i} , and specifically $\sigma_{-i}^L(s)$, representing the second period action of the Cooperative type opponent after observing signal s . We will only consider $\sigma_{-i}^H(s) = D$ because for Competitive type players it is only rational to play defect in the second period, regardless of what was observed through monitoring.

We have the following two possible second period actions by a Cooperative type opponent, $\sigma_{-i}^L(s)$. For each, we assess how player i responds:

1. $\sigma_{-i}^L(s) = D$. Cooperative Type Opponent Plays Defect

When both the Low and Competitive type opponents play D after observing signal s , it is clear that the only sequentially rational strategy for player i is $\sigma_i^L(s) = D$ as well, regardless of the belief.

¹⁷Formally $\mu = \mu_1(L, s) = \text{Prob}(\Theta_2 = H | \Theta_1 = L, s)$, but we will just use μ for convenience.

¹⁸Appendix A.1 provides verification that the belief system which supports each possible possible strategy is consistent with Bayes rule. These beliefs come from either updating based on the starting belief α and the observed signal in period 1, or if updating is not pinned down by Bayes rule, from a baseline assumption the the opponent is a Competitive type. See Lemma 6 in the Appendix.

2. $\sigma_{-i}^L(s) = C$. Cooperative Type Opponent Plays Cooperate

In this case, for $\sigma_i^L(s) = C$ to be sequentially rational, it must yield an expected payoff greater than or equal to that of playing D . The required condition is,

$$\begin{aligned} E[u_i^L(C, \sigma^{-i})|s] &\geq E[u_i^L(D, \sigma^{-i})|s] \\ \mu(-l) + (1 - \mu)r &\geq \mu(-c) + (1 - \mu)g \\ \frac{r - g}{r - g + l - c} &\geq \mu \end{aligned} \tag{2.4}$$

The condition is an important relationship between the parameters and the updated belief, μ , about whether the other Player is a Competitive type. We can define the **cutoff point**:

$$\mu^* = \frac{(r - g)}{(r - g + l - c)} \tag{2.5}$$

The cutoff point, μ^* , represents the maximum probability of a Competitive type opponent (updated based on the observed monitoring signal from period 1) beyond which it is not rational for a Cooperative type to play cooperate in the second period. Formally, for the Cooperative type, playing cooperate in period 2, $\sigma_i^L(s) = C$, is the only sequentially rational strategy if $\mu < \mu^*$. Similarly, $\sigma_i^L(s) = D$ is the only sequentially rational strategy if $\mu > \mu^*$. And if $\mu = \mu^*$, then player i is indifferent between C and D .

It is useful to consider the cutoff $\mu^* = (r - g)/(r - g + l - c)$ in greater detail because it characterizes the effects of other cost/benefit parameters and their relationship to beliefs about the opponent. Since playing C can only be sequentially rational when $\mu \leq \mu^*$, then values of μ^* closer to zero create a more strict condition on where second period cooperate actions are possible. That $\mu^* > 0$ is clear since $r > g$. But we see that μ^* decreases as

$r - g$ decreases or as $l - c$ increases. The difference $r - g$ represents the additional benefit to the Cooperative type from coordinating on (C, C) . This difference captures the benefit of mutual cooperation (C, C) over comparative advantage, (C, D) . So as the benefit from mutual cooperation relative to comparative advantage increases, the benefit of being able to get cooperation with a Cooperative type opponent increases. Hence, the Cooperative type has a higher incentive to cooperate even when facing the prospect that the opponent may be a Competitive type, and μ^* , the maximum belief that the other player is Competitive type for which C is sequentially rational, increases. The difference $l - c$ measures the cost of being taken advantage of by a defection compared to the status quo. As this cost, $l - c$, increases, a Cooperative type player needs to be more sure that he is not playing a Competitive type opponent in order to still want to cooperate, and so μ^* decreases.

Candidate strategies

A profile of strategies is a Perfect Bayesian Nash Equilibrium when (i) players are sequentially rational given a system of beliefs and (ii) beliefs are updated correctly via Bayes rule when possible. We consider three strategy profiles for how the players behave in each period. (See the Appendix for full proofs and expected utility calculations.)

Strategy 0, Always Defect: Player 1 and Player 2 both play Defect in both periods, regardless of type and observed signal. This strategy is always a possible equilibrium. If both states are going to defect in both periods, there is no advantage to signing any kind of treaty and we get no cooperation and status quo payoffs. While it is important to recognize that this equilibrium exists, it is also trivial for the purposes of this analysis. In practice, it simply means that states could always choose not to pursue a treaty.

Strategy 1, Competitive Types Always Defect: Competitive types play D in both periods, no matter what signal they see. Cooperative types play Cooperate in period 1, then

play Cooperate in period 2 if they observe a cooperate signal \bar{s} , and play D if they see a defect signal \underline{s} .¹⁹

Strategy 1 is an equilibrium when the following conditions are met:

$$\left(\frac{\alpha}{1-\alpha}\right) \left(\frac{l-c}{t+c}\right) + \left(\frac{t-r}{t+c}\right) \geq p \geq \left(\frac{\alpha}{1-\alpha}\right) \left(\frac{l-c}{r+c}\right) - \left(\frac{r-g}{r+c}\right) \quad (2.6)$$

$$p \geq \frac{\alpha - \mu^*}{\alpha - \alpha\mu^*} \quad (2.7)$$

$$\text{where } \mu^* = (r - g)/(r - g + l - c)$$

Strategy 1 gives the following expected utilities:

$$\begin{aligned} E[u^L] &= (1 - \alpha)2r - 2\alpha l + p\alpha(l - c) \\ E[u^H] &= 2t - 2\alpha(t + c) + p(1 - \alpha)(-c - t) \end{aligned} \quad (2.8)$$

Strategy 2, Both Types Cooperate at first: Competitive types play C in period 1 and then D in period two. Cooperative types play C in period 1, then play C in period 2 if they see a cooperate signal \bar{s} and play D if they see a defect signal, \underline{s} .

Strategy 2 is an equilibrium when the following conditions are met:

$$\alpha \leq \min \left\{ \frac{r+c}{t+c}, \mu^* \right\} \quad \text{and} \quad p \geq \frac{t-r}{(1-\alpha)(t+c)} \quad (2.9)$$

¹⁹A belief system that supports this strategy is $\mu_i^{L,H}(\emptyset) = \alpha$, $\mu_i^L(\bar{s}) = (1-p)\alpha/(1-p\alpha)$, $\mu_i^L(\underline{s}) = 1$, and $\mu_i^H(\bar{s}) = \mu_i^H(\underline{s}) = \alpha$. See Appendix for details.

Strategy 2 gives the following expected utilities:

$$\begin{aligned} E[u^L] &= \alpha(r - l) + (1 - \alpha)2r \\ E[u^H] &= \alpha(r - c) + (1 - \alpha)(r + t) \end{aligned} \tag{2.10}$$

Note that for both strategies, the payoffs depend both on the level of monitoring, p , and on the probability that the opponent is a Competitive type, α . The key difference between these two strategies is whether the Competitive type plays C or D in period 1.

Importantly, both Strategy 1 and Strategy 2 rely on the monitoring signal. We can limit our analysis only to these two strategies because they will always be chosen over other strategy profiles. Further evaluation of the model, discussed in the Appendix, shows that these two “monitoring sensitive” strategies always have higher payoffs than other equilibrium strategies which do *not* rely on the signal, such as Cooperative types always playing Defect in the second period. This finding applies for all parameter ranges for equilibrium strategies. I assume that states will select the more efficient strategy (that which gives higher pay-offs) when multiple strategies are equilibria.²⁰ Finally, under parameter conditions where both Strategy 1 and Strategy 2 are possible equilibria, Strategy 2 will yield higher payoffs and will be adopted over Strategy 1.

2.2.4 Bargaining Stage

In the bargaining stage, the player must decide on either monitoring level p or no treaty at all. If a monitoring level is agreed upon, then that level is implemented and play moves to the

²⁰The Appendix provides an evaluation of all possible pure strategies for the implementation game. I identify the conditions under which strategies are equilibrium solutions, and demonstrate that some strategy profiles are never equilibria. I then specify which strategies are more efficient under the same equilibrium conditions.

second stage. If there is no agreement, then the game ends with both players receiving status quo per period payoffs $(-c_1, -c_2)$. The cost of monitoring level p is given by the function $c(p)$.

Consider a Take-It-or-Leave-It bargaining game.²¹ A player makes an offer of monitoring level, and if the monitoring level is accepted then that level is implemented and play moves to the second stage. If the monitoring level is rejected, the game ends with both players receiving status quo payoffs. Since the players are symmetric, it does not matter which one makes the offer.

A Competitive type player will never want to reveal that he is a Competitive type, since he can gain from taking advantage of a Cooperative type in the enforcement stage. Therefore in the Bargaining stage, a Competitive type will simply pretend to be a Cooperative type by accepting any level of monitoring that a Cooperative type would accept under the same conditions. This means that there are no separating equilibria in bargaining, only pooling where both Competitive and Cooperative types make the same offers.

We can identify several ranges of α at which we can expect different behaviors with respect to offers of monitoring levels.

1. For $\alpha \leq \mu^*$ players will offer and accept $p = 0$. Recall that μ^* is the level at which we get cooperation for Cooperative types with no monitoring. If states are sure enough that the other side is a Cooperative type, cooperation will happen with no monitoring.
2. For $\alpha > \mu^*$ the level of monitoring which gives the highest expected payoff for the Cooperative type will be offered and accepted by both types of players. The expected

²¹This bargaining structure is a simplification for the purposes of clearer analytic calculations. In reality, we of course see negotiations, possibly multiple offers from both states, or posturing and bluffing during bargaining. A Take-It-or-Leave-It game assumes that nothing is learned or changed during the process of bargaining, and that negotiation back-and-forth comes to a point when either one side makes an offer that it knows the other side will accept, or no treaty is signed.

utility is calculated based on the equilibrium stage 2 strategy which is most efficient at that level of p and α .

3. For $\alpha \geq \gamma^*$ no offers will be made as Cooperative types will prefer the status quo to any agreement.

2.2.5 Comparative Statics

To evaluate which level of monitoring is chosen under different beliefs (α), and which strategies are played in equilibrium, we need to make some additional assumptions about the other parameters. We set r , g , t , l , and c to reasonable values according to their relationship as outlined in the game payoffs. Then, keeping these constant we evaluate the optimal level of monitoring p which would be chosen in equilibrium.²² This is the comparative static of interest; as beliefs about the adversary change, how does this affect whether states are able to sign a treaty, and at what level of monitoring?

Numerically, we set $r = 3, l = 2, t = 5, g = 2, c = 0$.²³

The other necessary assumption is the cost function. We set the cost of monitoring high enough that a state would not want to pay for monitoring if it was fairly sure that the other side would cooperate anyway. If monitoring were cheap, then states could include it in treaties even with adversaries likely to cooperate. However, we know that high degrees of monitoring carry significant material and non-material costs. We reflect this empirical reality in the cost function. Low levels of monitoring are relatively cheap, but the cost rises quickly,

²²While analytic solutions are often preferred, in this case demonstrating the implications of equilibrium conditions using numeric simulations provides an effective way to quickly understand the relationships between the main variables of interests. For an example of other work that similarly relies on numeric examples, see: Smith, see n. 16.

²³Note that in the payoff matrix, the sucker payoff is $-l$.

meaning that states would not want to pay for more than they need given beliefs about the opponent. Further, at the highest levels of monitoring, where detection of cheating would be nearly 100%, we expect the monitoring to be very expensive, reflecting the substantive view in the arms control literature that perfect observation would be essentially prohibitively expensive.

The results of the analysis are presented in Figure 2.2. Along the X axis is α , capturing the belief about the adversary. At low levels of α on the left side of the plot, the states believe one another to be likely Cooperator types, and at high levels of α on the right, states believe one another to more likely be Competitor types.

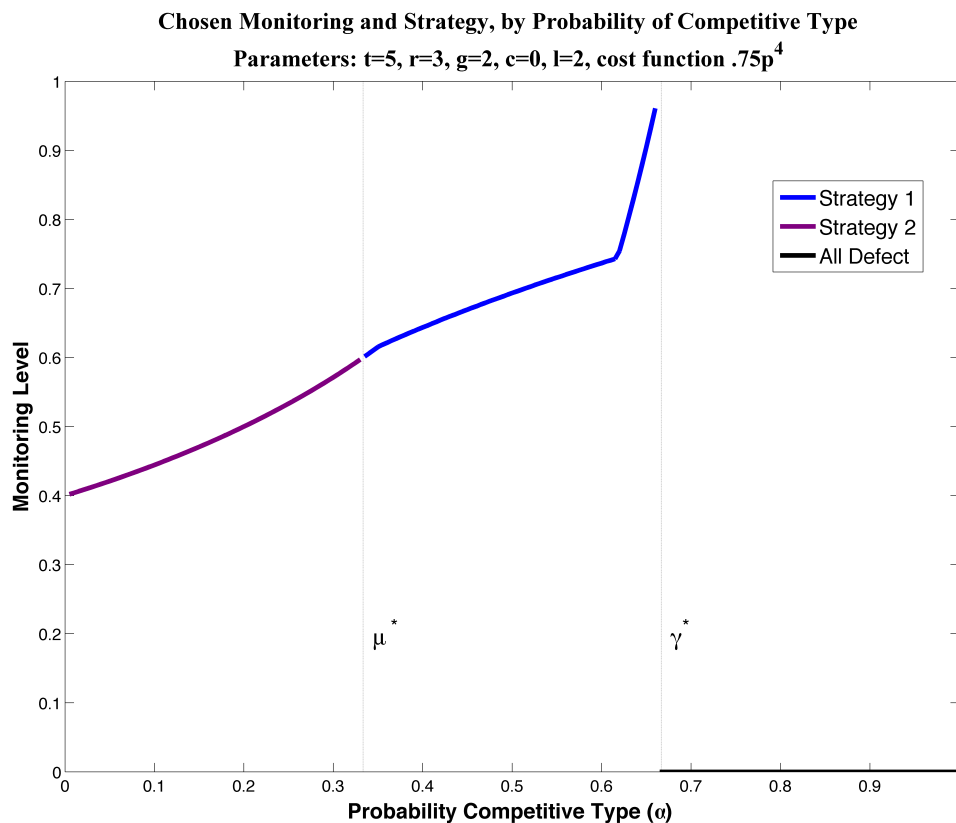


Figure 2.2: Comparative Statics Plot – optimal monitoring selected

The blue and purple lines show the optimal level of monitoring that Player 1 offers and Player 2 would pick for a negotiated treaty.²⁴ As the probability of a Competitive type increases, the optimal monitoring level increases. However, at a certain probability of a Competitive type, α , no level of monitoring is enough to make cooperation with a likely cheater worthwhile, and we do not observe arms control agreements as indicated by the black line along the x-axis. This maximum probability is designated as γ^* .²⁵

The figure shows three regions, divided by cutoffs μ^* and γ^* , which guide our thinking about the observable hypotheses that emerge from this analysis. In the first region, between 0 and μ^* , limited amounts of monitoring allow states to play strategy 2, where they cooperate in both periods and get a higher payoff. However, in this first region, treaties without monitoring are also possible with strategy 1 (not plotted). Next, consider the second region, between μ^* and γ^* , where we see increasingly higher levels of monitoring adopted in equilibrium. Finally, in the last region, no treaties are possible.

Movement from either the right (low α) or the left (high α) side of the plot towards the center suggests an increase in uncertainty about beliefs. In the middle of the plot, states are most unsure about the type of opponent they are facing, with the probability of a Competitive type at 50 percent. Suppose we start with $\alpha = .8$ and, with all other factors constant, α changes to .65. In this scenario, the belief about the opponent has become less certain. At the same time, we have moved from the last region of α where no treaties were possible to a region where we should in equilibrium see treaties with a high level of monitoring. Next, suppose we start with $\alpha = .1$ and then α changes to .3. Again, the belief has become less certain, and we have moved from a region where there was cooperation with very low monitoring towards agreements with a somewhat higher level of monitoring, though

²⁴Importantly, not all of strategies are available as equilibrium solutions at all ranges of α . If more than one strategy is available for a value of α , we assume that the one with the highest expected utility for player 1 (who makes the offer of p in the bargaining stage) is selected.

²⁵The γ^* is the upper margin of α at which playing Strategy 1 an equilibrium.

still relatively low.

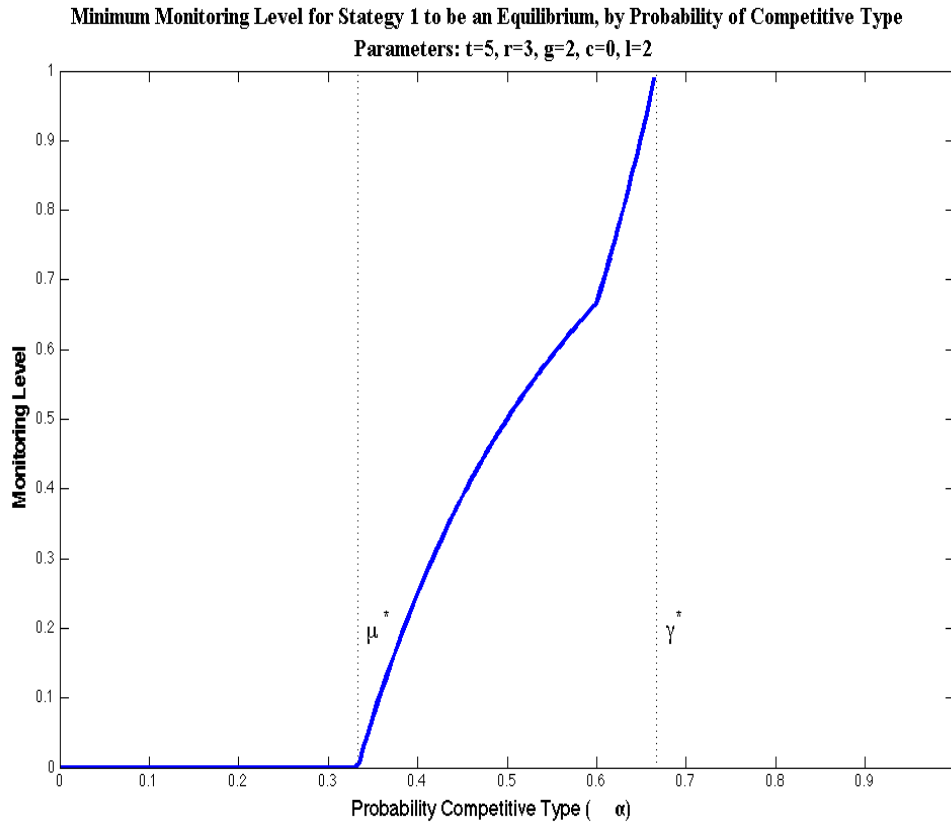


Figure 2.3: Comparative Statics Plot – minimal monitoring for an agreement

As is to be expected, the exact values set for the parameters affect where Strategy 1 and 2 result in cooperation equilibrium, and the the level of monitoring that is chosen at each belief. In any specification, only Strategy 1 is available when $\alpha > \mu^*$ and the amount of monitoring needed for an agreement increases as the probability of a Competitive type increases. The presence of Strategy 2 makes some of the results in $\alpha < \mu^*$ range more complex and sensitive to some parameter specifications. Therefore, to gain a better intuition, it is also useful to look at the *minimal* level of monitoring that could be chosen under each condition and still result in cooperation. Unlike the optimal level shown in Figure 2.2, the minimum

level of monitoring shows in Figure 2.3 is far less sensitive to parameter specification, with only the exact cutoffs for μ^* and γ^* affected by changes in the payoff values.

In Figure 2.3 it is even clearer that when beliefs are fairly certain that the opponent is a Cooperator type, cooperation can be maintained without any monitoring, which from a substantive standpoint suggests an informal agreement. Comparing the two figures suggests that the minimal level of monitoring at which cooperation can be maintained does not always give the highest expected payoffs. This suggests that in treaty bargaining, states may try to negotiate the higher optimal monitoring level in order to get higher expected benefits, but will also setting for the minimal level if offered.

2.2.6 Summarizing Beliefs, Uncertainty, and Treaty Provisions

The relationships identified in the model comparative statics lead to several hypotheses. The purpose of these hypotheses is to use the findings of the model to form some predictions about when we would expect an equilibrium to change from no treaty to an observed treaty outcome. Importantly, the introduction of uncertainty makes it possible that formerly cooperative partners are now cheaters, while former cheaters may actually be amenable to cooperation.

The table shows two conditions, one where beliefs remain unchanged with high certainty about the type of adversary, and one where they become uncertain. The next section focuses on the moments when this uncertainty might occur, and therefore the reason why we might observe a switch between the two conditions. Arms control treaties are still possible during levels of relatively low uncertainty, both with likely cooperators and likely cheaters, because other factors still play a role. For example, if benefits of cooperation are very high, a high monitoring treaty will be likely even with a likely cheater. If monitoring is very costly to implement, high monitoring treaties will be less likely with any kind of opponent. However, I argue that uncertainty will make treaties more likely and is particularly essential

Table 2.1: Beliefs and Treaty Types

BELIEFS ABOUT ADVERSARY	CHANGE IN BELIEFS	
	remain stable	become uncertain
Cooperative Type (low incentives to cheat)	<ul style="list-style-type: none"> • No agreements States expect that both sides will cooperate without formal institutions or information exchange provisions 	<ul style="list-style-type: none"> • Low monitoring States generally expect a cooperation, but are concerned that there now a small possibility that opponent is actually a Competitive Type. A formal institution hedges against this possibility, but only low levels of information exchange required.
Competitive Type (high incentives to cheat)	<ul style="list-style-type: none"> • No agreements States expect that the opponent will definitely cheat, so are unlikely to sign any kind of agreement 	<ul style="list-style-type: none"> • High monitoring States still fear a Competitive Type, but there is now a possibility the opponent may be a Cooperative Type. Agreements are possible with intrusive information provisions to catch likely cheating.

for getting cooperation with Competitive type opponents.

Hypothesis 1: When states believe their opponents are likely to have low incentives to cheat on an agreement (Cooperative types), we should not expect to see many treaties; states will likely pursue cooperation without formal institutions and without costly monitoring.

Hypothesis 1 is of course very intuitive. When states believe their opponents share the same strong incentive for cooperation, the cooperation will be possible without a formal agreement. This is particularly true when monitoring is costly.²⁶ These states may already be exercising similar restraint in a number of security areas, either implicitly or through simple diplomatic coordination. For example, two states may avoid fortifying their border without formally agreeing to do so because both want to avoid signals of arming. Implementing the same cooperation through a formal institution would add unnecessary costs; with negotiators meeting and texts drafted, even the most basic arms control agreements take some resources to conclude.

However, if states begin to doubt the cooperative incentives of their adversaries, they are likely to seek more formal solutions, leading us to hypothesis 2.

Hypothesis 2: When states believe their opponents are likely to have low incentives to cheat on an agreement (Cooperative types), but then events or changes occur to make them

²⁶The comparative static also shows that states choose to pay for some monitoring (in order to get higher payoffs from Strategy 2) even in the range where cooperation can happen without monitoring. Here, the prospect of getting caught deters Competitive types from defecting, and they play cooperate in the first round. However, this strategy holds only when states believe their opponents are not likely to be Competitive types in the first place. For the purposes of translating the model results into empirically testable hypotheses, I simplify the distinction between Strategy 1 and 2 and focus on informal or possibly very low monitoring in the first region. However, it would be fruitful for future research to explore this range in more detail, and compare the situation under which states include low levels of monitoring in treaties to deter cheating vs situations where they rely on informal cooperation and national means of monitoring that does not require additional institutional tools.

less certain of this assessment, they will be more likely to conclude low monitoring treaties than rely on non-treaty options.

When there is an increased possibility that the adversary may in fact have higher incentives to cheat than previously assessed, states will find it worthwhile to hedge and use formal institutions with monitoring provision to get more information on the adversary's compliance behavior. In these cases, a state believes that its adversary is still for the most part likely to cooperate, so it will seek only low cost means to provide just enough extra assurance of cooperation.

Low level monitoring agreements may also serve as a way to coordinate like-minded states around a particular benefit to be gained from joint action, giving just enough information that others have likewise identified the same restraint or limitation as beneficial are in fact complying. For example, states may prefer free navigation through a strategic strait or river, but a common understanding of the difference between military and civilian ship passage requires more explicit rules than tacit cooperation can offer. States mutually prefer cooperation but there is still also some uncertainty about their incentives and without an agreement the area or means of mutual cooperation may not always be clear. Such agreements might include conventions, such as a ban on arming mercenaries. Low monitoring is needed for the coordination in cases where it is possible that some state may see temporary advantages in renegeing on a generally well supported ban - such as trading arms with third parties or employing piracy.

Hypothesis 3: When states believe that their opponents have high incentives to cheat on an agreement, they are unlikely to pursue cooperation through arms control treaties.

Like Hypothesis 1, this prediction is intuitive. Why pay for costly information ex-

change provisions such as inspections and monitors when the adversary is still going to try to cheat, such as by hiding weapons in underground facilities, producing weapons under the guise of dual use technology, or misleading verification efforts by moving missiles and warheads. Even more generally, why cooperate at all?

Hypothesis 4: When states believe their opponents have high incentives to cheat, and some events or changes occur to make them less certain of this belief, states will be more likely to sign high monitoring treaties where none were previously possible.

The introduction of uncertainty implies that adversaries which were previously perceived to be definitely Competitive types may now be somewhat more likely to be Cooperative types after all. For example, a state that was 90% sure its partner would cheat on an agreement would now place that belief at 70%. The fact that there is a chance the adversary may in fact cooperate makes arms control cooperation worthwhile. But this window of opportunity to reap gains from cooperation remains a risky one. Because high incentives to cheat are still a concern, high monitoring is necessary to give Cooperative types the confidence to know that they will be able to quickly detect cheating and respond.

Hypothesis 5: Combining the logic of hypotheses 2 and 4, an increase in uncertainty should lead to an overall higher probability of arms control treaties, both with high and low monitoring provisions.

For both Hypotheses 2 and 4, the important effect for adversarial cooperation stems from changes in beliefs that increase uncertainty rather than from changes that reinforce prior beliefs. Some events may confirm rather than challenge beliefs about the adversary; a state might become even more certain that the other is a cheater or might see its partner

as even more cooperative. However, going from high certainty to even stronger beliefs does not change the behavior in terms of formal cooperation - in both the certain Cooperative and Competitive cases, states are already not signing agreements, and then would be even less likely to do so. Rather, we are most interested in changes that may be dis-confirming of prior beliefs as they create increased opportunities and needs for agreements. Looking at the comparative statics plots, we can get change from both side towards the middle region. An overall increase in the likelihood of arms control agreements happens because both directions together imply more high and low monitoring agreements.

Hypothesis 5 steps back from the question of what differentiates treaty forms to generalize about simple treaty occurrence. It is particularly important for the empirical implications of the theory. Data may not always be precise enough to indicate the direction of belief change. But, even if we cannot fully observe the nature of prior beliefs, events which are likely to call into question any kind of existing assessment are likely to lead to more arms control agreements.

2.3 Sources of Uncertainty

The model takes beliefs and the uncertainty surrounding them as exogenously determined. However, this is an unsatisfying characterization – beliefs and uncertainty are both very broad categories with numerous sources. The hypotheses also focus changes in beliefs and increase in uncertainty. Under what conditions would beliefs about the adversary be likely to shift? In this section, I outline several sources of beliefs about the adversary and the focus on domestic political changes as critical sources of increased uncertainty. These changes in domestic politics make new security policies possible and suggest to observers that a state may have different incentives when it comes to arms control cooperation.

2.3.1 Baseline beliefs and sources of uncertainty

In the model, Nature assigns some probability that the opponent is a Competitive type or a Cooperative type. This set-up is a simplification of a reality where states hold certain beliefs about the nature and incentives of other states. These beliefs may have either material or ideational sources. Note that the rational choice approach assumes that states maximize payoffs given beliefs and actions, but it does not impose any conditions on the sources of beliefs. A full theory on belief formation is a goal for a separate project. However, in the context of the theory presented here the nature of beliefs and how they can be observed is important to note.

Intelligence assessments of an opponent's security policy or capabilities are of course likely to contribute to a state's beliefs about that adversary's incentives. In addition, recent interaction, either through diplomacy or conflict, also informs expectations of a state's security policies. For example, whether an adversary recently won or lost conflicts is informative of military capabilities. The adversary's alliance patterns, arms transfers, or votes in the UN on security issues could likewise be informative of intentions. Beliefs based on these observations often appear in formal estimates produced by the intelligence community or in testimonies and statements of government leaders. They take the form of predictions about whether adversaries are developing new military capabilities, have aggressive intentions towards contested territory, seek additional influence among other states, or are likely to cheat on proposed cooperation. However, observed information may be only one part of how beliefs are formed. The interpretation of facts is subject to biases, bureaucracies, and even personalities. For example, there may be existing conceptions about the nature of certain forms of government, such as communism, which are not based on information about the state's behavior but rather on judgment about its philosophy or ideology.

Baseline beliefs about the nature of the adversary's incentives may change if states observe events or circumstances that create uncertainty about existing assessments. Uncer-

tainty about incentives to cheat is caused either by 1) factors which present new advantages (or disadvantages) from military actions or 2) indicators that the adversary may have changed in character or foreign policy outlook. My theory focuses on the second sources of change, but it is important to briefly note what belongs in the first category as well.

In the first category of new advantages and disadvantages as sources of uncertainty, we are interested in events that would go against, rather than confirm, a prior assessment. For example, states having visible changes in military capabilities or a powerful state losing a conflict. Such events would suggest reasons to revise prior beliefs. Changes in other foreign policy behavior, such as new alliances, would likewise raise uncertainty about existing assessments. Also in the first category, technology plays an important role. Some kinds of scientific advancements make estimates of capabilities or aggressive intentions more difficult to make. For example, the biological sciences are a constantly evolving field, which makes it possible for states to have quick changes in biological weapons capability. An even more extreme example is cyberspace, where the development of substantial new capabilities is a constant threat. In contrast, nuclear technology does not breed the same kind of uncertainty – while states can make improvements in size, yield or accuracy of their nuclear weapons, nuclear is a well developed and well known technology where big advancements are unlikely.

Uncertainty that arises out of possible changes in the nature or broader preferences of the adversary is arguably a more interesting factor from a political science perspective. Such broad preference changes might include a shift from revisionist to status quo interests, or a change in the ideological orientation of a government, which would in turn have implications for its alignment and alliances.

Domestic political institutions have a strong impact on broad security preferences, but looking at institutions alone often cannot account for how preferences can change. There is a well-developed literature on the connection between domestic institutions and international

behavior.²⁷ Specifically on international cooperation, scholars have argued that democratic domestic institutions, such as elections, legislatures, and oversight - allow states to make stronger commitments internationally and therefore, make them more able to form agreements, treaties, or regimes.²⁸ As noted in the introduction, this work largely falls in the “second wave” of institutions literature which seeks to understand when cooperation occurs, but not what form it takes.

Political institutions do play a role in determining whether observers would be more or less certain about a state’s preferences, but evidence on patterns of agreement forms suggests that it is limited. It is likely that the degree of uncertainty about an adversary’s incentives to cooperate is higher when dealing with autocracies. With less information publicly available, adversaries are less able to freely observe the state’s policies, military budgets and developments, and future plans. In contrast, more is observable about democracies, and whether that observation is that there are low incentives to cheat or high incentives to cheat, the assessment should be a more certain one. However, looking at one of the main cooperation pairings, between the US and USSR/Russia, suggests that a focus on domestic institutions is likely insufficient to explain arms control design. Changes in these domestic institutions within these states were infrequent, while there is considerable variation in both

²⁷There are numerous examples, identifying somewhat different mechanisms for the effect of domestic institutions on different kinds of international behaviors (mostly in the trade sphere), but the key works include: Helen Milner, *Interests, Institutions, and Information: Domestic Politics and International Relations* (Princeton, NJ: Princeton University Press, 1997); Ronald Rogowski, “Institutions as Constraints on Strategic Choice,” in *Strategic Choice and International Relations*, ed. David A. Lake and Robert Powell (Princeton University Press, 1999); Beth A. Simmons, *Who Adjusts?: Domestic Sources of Foreign Economic Policy During the Interwar Years* (Princeton, NJ: Princeton University Press, 1994); Peter B. Evans, Harold Karan Jacobson, and Robert D. Putnam, *Double-Edged Diplomacy: International Bargaining and Domestic Politics* (Berkeley, CA: University of California Press, 1993).

²⁸Lisa L. Martin, *Democratic Commitments: Legislatures and International Cooperation* (Princeton, NJ: Princeton University Press, 2000); Leeds, “Domestic Political Institutions, Credible Commitments, and International Cooperation,” see n. 10; Kurt Taylor Gaubatz, “Democratic States and Commitment in International Relations,” *International Organization* 50, no. 1 (Winter 1996): 109–139; Peter F. Cowhey, “Domestic Institutions and the Credibility of International Commitments: Japan and the United States,” *International Organization* 47, no. 2 (Spring 1993): 299–326.

frequency of arms control treaty signature over time and agreement forms.

Finally, the literature on how credible commitments based on domestic institutions lead to increased cooperation - often cited in studies of trade, environmental, and human rights institutions - does not fully apply to the design security agreements. For security agreements, states not only need to agree to cooperate, they also must agree that they will not cheat intentionally. In the security context, the decision to comply or cheat is made by the government, which controls the military and weapons production. On intentional noncompliance, political institutions may play a limited role in some cases - for example, because the US is a democracy it is more costly for the government to get caught cheating on any treaty; there would be public backlash. While this is generally not the case for autocracies, it might be the case that even in a democracy, cheating for a national security related reason could be easily justified to domestic audiences. A credible commitment to compliance based on domestic institutions is more difficult in the security sphere. However, many treaties actually respond to this problem by including compliance terms in the treaty itself, using monitoring to ensure compliance rather than the state's polity as commitment.

2.3.2 Uncertainty due to domestic political volatility

Uncertainty about a state's cooperation incentives may come not from the nature of its institutions, but rather from volatility in its domestic political situation. I define domestic political volatility as the occurrence of events within the domestic political fabric of a state which raise the possibility that foreign policy decisions and incentives may be changing or will change in the near future.²⁹ Therefore, a key component is that the domestic events are

²⁹My use of the term volatility does not differentiate between volatility which is an accepted part of a state's political process, and that which is a disturbance of that process, such as leadership change due to a coup. For the purposes of my theory, the focus is on possible changes in policy of the state. On the other hand, there is quite a bit of new research focused on sources "political instability" cases such as civil wars, outbreaks of political violence, and state collapse. Jack A. Goldstone and Robert H. Bates, "A Global Model for Forecasting Political Instability," *American Journal of Political Science* 54, no. 1 (Jan.

both observable by outside actors and are relevant not only for domestic policy but also for foreign affairs.

Leadership change and leadership tenure

Any new leadership, which enters through either regular or irregular means might increase uncertainty about foreign policy. Recent research has shown that new leaders are more conflict-prone because with new leadership comes greater uncertainty about that leader's resolve.³⁰ Leaders may differ in their resolve because they might have different assessments about the cost of pursuing policy goals through armed conflict.³¹ Rider (2013) argues that new leaders, facing perceptions of higher uncertainty about their resolve, would be more prone to start an arms build-up to solidify or signal their reputations to international observers.³²

However, during these moments of increased uncertainty, there are also two reasons for formal arms limitations may be more likely as well. First, if new leaders do in fact seek to secure a reputation for resolve by pursuing an arms race, their adversaries will have added incentives to lock in the status quo before such an arms build-up begins. A one-sided arms build-up can create increasing threats, but responding with an arms race is also problematic. Arms races are costly, and can hurt domestic economies.³³ Thus, as a new leader comes into

2010): 190–208. My concept of volatility is agnostic about how the change occurred, and rather picks up uncertainty about security incentives immediately following a change. However future research should further explore differences in uncertainty following regular vs. irregular political changes, or based on the manner in which the change occurred.

³⁰Giacomo Chiozza and Hein E. Goemans, "Peace through Insecurity Tenure and International Conflict," *Journal of Conflict Resolution* 47, no. 4 (2003): 443–67; Giacomo Chiozza and Hein E. Goemans, "Avoiding Diversionary Targets," *Journal of Peace Research* 41, no. 4 (2004): 423–43.

³¹Scott Wolford, "The Turnover Trap: New Leaders, Reputation, and International Conflict," *American Journal of Political Science* 51, no. 4 (Oct. 2007): 772–788.

³²Toby J. Rider, "Uncertainty, Salient Stakes, and the Causes of Conventional Arms Races," *International Studies Quarterly* (2013).

³³Andrew Kydd, "Arms Races and Arms Control: Modeling the Hawk Perspective," *American Journal of Political Science* 44, no. 2 (Apr. 2000): 228–244.

power we should see competitive states initiating arms treaty discussions as they try to figure out whether the new leader will seek new capabilities. With increased incentives for an agreement, competing states may be willing to both spend more resources to negotiate a treaty and make more concessions to achieve its prompt completion.

Second, it is likely that signaling resolve through an arms build-up may not be the only kind of signal that a new leader wishes to send to other states. If uncertainty increases about a leader's resolve as it pertains to conflict, it is likely that uncertainty also increases about the leader's other security-related views and incentives. In addition to having a different assessment of the costliness of conflict, a new leader may have different assessments of other security trade-offs, such as on the best allocation of resources between economic vs. military issues, or on building new alignments with international partners. Or, the new leader may have a different time horizon for foreign policy goals - either longer or shorter than his predecessor. Note that variation in security policy priorities between leaders is not limited to leaders who come into power through irregular means such as coups or revolutions. There have been significant differences on arms policy between normally elected US presidents – for example, while President Bush rejected arms control approaches, President Obama made an arms treaty with Russia his top priority.

Signing new arms control agreements is one way that a new leader could signal a change of security position. This signal is a costly one and one that can be made more costly with more intrusive monitoring provisions. For highly antagonist states (the likely “Competitive types” in the above analysis), convincing an opponent that a new leader brings a real change in security policy may be particularly difficult. In these cases, states may be willing to accept high monitoring in treaties because in addition to giving benefits from cooperation, when implemented such treaties allow them to credibly signal a change in “Type.” While that signal does not affect the current cooperation, a record of compliance with the agreement may have important implications for other agreements and international

interactions more broadly.³⁴ For the Cooperative types, accepting and complying with a somewhat higher monitored agreement (or a formal agreement at all rather than tacit cooperation) can serve as a way to reassure other states for which the leadership change raises concerns about the consistency of prior cooperative policies.

As a new leader spends more time in office, uncertainty about the leader's resolves decreases. Other states are able to observe the new leader's behavior in both peaceful and conflict interactions. As uncertainty decreases over the course of a leader's tenure, the probability of different treaty types will either decrease back to its original level, or become stable at a new level given new beliefs about states' incentives.

Cabinet turnover as an indicator of policy change

Substantial changes in high level officials, such as cabinet or other executive officials, is a second indicator of possible policy change. In some ways, cabinet and executive changes would overlap with leadership change; a new leader is likely to bring leadership from his party into positions of power and might appoint supporters to powerful posts. However, observing cabinet changes helps identify two scenarios which are likely *not* cases of policy change and therefore should not be interpreted as signals of volatility. First, it is possible that a new leader is the same as the last one. How would an observing state know that a new leader was actually bring in new beliefs or new policies? When would they start to seriously suspect that something about a new leader was different? Second, a new leader may bring new ideas and new assessments, but he is often not the only person involved in the decision making process, even in an authoritarian regime. Some leaders may not be able to translate their views into implemented policies; they may not be able to control their parties or may be figureheads of entrenched elites.

³⁴Note that because Competitive types have an incentives to masquerade as Cooperative types and then try to secretly cheat, the key test for updating beliefs about state types is not in what form is selected, but rather in how the agreement is implemented.

Shifts in senior policy making and policy implementation roles suggest that new policies are likely to be supported and propagated within the government. Games of musical chairs in senior policy positions could be an indicator of an ongoing power struggle, where the outcome for the ultimate policy position adopted is uncertain. Looking at cabinet changes also captures situations where a new leader enters, but the moment of possible policy change does not set in until that leader consolidates power and starts to change up his high level leadership. Finally, some policy changes may occur even under a constant leader, and cabinet level changes may be an indicator that these are occurring. For example, if a leader increasingly has to make policy concessions to a growing opposition party, the influence of new actors may become apparent through changes in policy-makers before there are any changes in the actual leader. This is particularly likely to be the case in non-democratic regimes.

A state that observes an adversary undergoing changes in cabinet or executive positions will be less certain of that adversary's incentives vis-a-vis arms control cooperation. The theory predicts that with this increased uncertainty, security agreements will be more likely because of changes in beliefs about the adversary. The expectation here is the same as for the leadership change measure discussed above, with just the source of uncertainty as a lightly different domestic phenomenon.

However, a state may also have additional incentive to pursue cooperation during times of cabinet and executive official turnover; institutionalized international cooperation could influence new government actors within the opposing state to seek more conciliatory security positions. In cases where distrust made previously agreements impossible (the condition of Competitive type opponents with high incentives to cheat) a successfully negotiated treaty can support the position of moderates vying for or consolidating power within the government apparatus. In cases where expectations of aligned security incentives allowed for tacit cooperation rather than for formal agreements (the condition of Cooperative type

opponents with low incentives to cheat), a negotiated treaty serves to better restrain any new actors who might pursue less cooperative ideas or policies if they gain power.

Public Pressure on Governments

Finally, domestic political volatility may come not from government changes, but rather from pressures for changes in either government or policy. These pressures are often economic in nature. Military budgets, particularly during arms races, can put a strain on resources. At the same time, there may be external stressors to the economy, such as changes to trade, financial markets, or production. In times of economic difficulty the public often demands more domestic economic support. Public pressure explicitly in a democracy both through discourse and protest, but public pressures also surface in autocracies.

Work on the effects of domestic unrest on foreign policy suggests that both increased competition and increased diplomacy are possible outcomes.³⁵ In some ways, the lack of consensus in academic studies on the effects of domestic unrest on foreign policy, and the recognition that there could be multiple types of outcomes, may mirror the uncertainty that state leaders would have in observing such events in an opponent state. There are good reasons to expect either increased competition or more cooperation.

Domestic public pressure on the government over domestic economic issues can have an impact on foreign policy decision making, whether or not it directly opposes military

³⁵Faten Ghosn and J. Patrick Rhamey, "A Menu for self-preservation: foreign policy substitutability in the context of domestic crisis," Paper presented at the Annual Meeting of the International Studies Association, March, Montreal. (2011); Natsuko H. Nicholls, Paul K. Huth, and Benjamin J. Appel, "When Is Domestic Political Unrest Related to International Conflict? Diversionary Theory and Japanese Foreign Policy, 1890–1941," *International Studies Quarterly* 54, no. 4 (2010): 915–937; D. Scott Bennett and Timothy Nordstrom, "Foreign Policy Substitutability and Internal Economic Problems in Enduring Rivalries," *Journal of Conflict Resolution* 44, no. 33 (2000): 33–61. In a similar variant, Arena (2009) argues that public unrest or economic difficulties can create greater restraint on leaders rather than motivation for distraction through use of force. Philip Arena and Glenn Palmer, "Politics or the Economy? Domestic Correlates of Dispute Involvement in Developed Democracies," *International Studies Quarterly* 53 (2009): 955–975. Arena means "restraint" as in avoiding conflict initiation, but the same logic can apply to restraint through international institutions as well.

spending, primarily in that it may motivate the government to alter guns vs. butter calculations.³⁶ A need to spend limited resources on economic improvements or more social services could increase incentives to avoid arms build-up, making arms control a more appealing option. Leaders facing domestic unrest at home, especially the kind that threatens regime legitimacy, may also be more willing to cooperate internationally to gain foreign support for responding to domestic insecurity, either through economic means such as increases in aid or bilateral trade or perhaps by overlooking repression.³⁷ In this scenario, a state that previously had high incentives to cheat on an agreement might now be more likely to have lower incentives to cheat.

On the other hand, a government's response to public demands may not always be towards more cooperation on restraining military capabilities. The government may instead seek to divert public attention by stoking international disputes or competition.³⁸ In some cases, increased spending in the defense sector could also create an economic boost. Public pressures for policy change may therefore affect incentives for security cooperation in either direction.

From the perspective of an observing adversarial state, the most significant indicators

³⁶Faten Ghosn, "Domestic Unrest and the Initiation of Negotiations," *International Negotiation* 16, no. 1 (2011): 69–85.

³⁷M. Taylor Fravel, "Regime Insecurity and International Cooperation," *International Security* 30, no. 2 (Fall 2005): 46–83.

³⁸The theory and evidence to support diversionary war or conflict incentives remain inconclusive in the literature. For examples and reviews of the extensive literature on diversionary conflict, see among others: Christopher Gelpi, "Democratic Diversions: Governmental Structure and the Externalization of Domestic Conflict," *Journal of Conflict Resolution* 41, no. 2 (Apr. 1997): 255–282; Jack S. Levy and Lily I. Vakili, "Diversionary action by authoritarian regimes: Argentina in the Falklands/Malvinas case," *The Internationalization of Communal Strife* (1992): 118–46; Sara McLaughlin Mitchell and Brandon C. Prins, "Rivalry and Diversionary Uses of Force," *Journal of Conflict Resolution* 48, no. 6 (2004): 937–61; Jeffrey Pickering and Emizet F. Kisangani, "Democracy and Diversionary Military Intervention," *International Studies Quarterly* 49, no. 1 (2005); John R. Oneal and Jaroslav Tir, "Does the Diversionary Use of Force Threaten the Democratic Peace? Assessing the Effect of Economic Growth on Interstate Conflict, 1921–2001," *International Studies Quarterly* 50, no. 4 (2006): 755–779; Jaroslav Tir, "Territorial Diversion: Diversionary Theory of War and Territorial Conflict," *Journal of Politics* 72, no. 2 (2010): 413–425.

of political volatility stemming from public pressure are demonstrations, riots, strike or other forms of social protest directed at government policy. While relatively normal in a democracy, social protest events can suggest significant opposition to the ruling political party, which may constrain that party's ability to carry out its desired policies even while it holds power. Autocratic governments are also often concerned about large public outcries, which can delegitimize the regime, even beyond a critique of the current leader in power. Social unrest happening in an autocracy is likely to be an even stronger signal of volatility than the same events occurring in a democracy.

Therefore, the presence of significant public pressure increases uncertainty about a state's incentives to cooperate internationally, both because the government may seek a specific security policy response to the public outcry (budget reallocation, or the diversionary approaches) and because governments may face new restraints on their foreign policies. Domestic political unrest in the form of riots and demonstrations may also suggest to outside observers that the current government is more likely to be replaced in the next election or leadership transition. The possibility of new leadership, particularly one that will be different from the current situation, raises many of the same uncertainties about future incentives for cooperation as with the two elite level indicators discussed above. Observable public pressure may mean that uncertainty develops before a leadership or cabinet change rather than after it.

States also have an incentive to exploit moments of public pressure uncertainty rather than wait for the outcomes in policy or government change. When a state has been relatively cooperative, and few formal agreements were necessary, the prospect of an upcoming policy or leadership change creates a further incentive to restrain any new leaders (or even just new policies) by establishing some formal cooperation now. On the other hand, when states have highly adversarial relations with few agreements possible, there is an incentive to lock in a moment of possible commitment to arms control for economic reasons, before the adversary

either recovers or finds other means to address social unrest.

Domestic Political Volatility Conclusion

To summarize, all three domestic political volatility sources identified in this chapter – new leaders, high level government official changes, and public pressure – have several important elements in common. First, each of these situations of political volatility have implications not only for changes in domestic policy but also for international behavior and security seeking calculus. They affect whose beliefs on the utility of force come to dominate the state's policy, how those beliefs play out in implemented security policies of the state, or how other constraints - such as domestic economic needs - may require new trade-offs in the security sphere.

Second, under different conditions, each factor could lead to a change toward either higher incentives to cheat on international cooperation, or towards lower incentives to cheat on cooperation. Depending on previous beliefs, one of these possibilities matters more than the other: if the adversary was already thought to be a very untrustworthy actor, more movement toward the same direction - an even likelier cheater - does not change the preferred outcome of just not pursuing cooperation. However, the increased possibility that the state may in fact now have low incentives suggests that an arms control agreement may be possible, though likely a high monitoring one to address possible cheating. Finally, each of the sources of political volatility can be observed and interpreted by outside actors. The uncertainty that such political volatility creates is therefore known by both players - one side may have new beliefs about its adversary's incentives, while the other side, experiencing the volatility events, also knows that its opponents are forming new judgments and will be willing to pursue different treaty forms.

2.4 Alternative Explanations

With little previous academic research on the design of arms control agreements, there is no common wisdom or accepted explanation for their occurrence and forms. As discussed in the Introduction, the extensive literature on specific arms control cases identifies a number of factors that scholars have identified as important for arms control, including the benefits of cooperation, variation in risks from cheaters, or different costs of monitoring. While I do not address their individual effects, focusing instead on the role of uncertainty, the factors are in large part incorporated as material trade-offs in my model.

However, an argument based on socialization, learning, and norm diffusion, is more of an alternative to my theory, though not necessarily a directly competing hypothesis. Socialization-based explanations have been developed in applications to understanding conflict behavior, trade policy adoption, and the impact of institutions, though to date has not been directly used to explain variation in arms control forms.³⁹ Alastair Iain Johnston's work has focused on the effects of socialization on Chinese security policy addresses participation in security institutions, so his argument may plausibly apply to institutional design as well. In this section I present an alternative explanation of adversarial agreement design based on these theories, and identify the hypotheses for the relationships and trends we would expect to observe in the data if there is support for socialization oriented explanations.

A socialization process is one where states acquire new interests and practices as a result of sustained interaction in social contexts. They either learn to follow rules that are accepted by a wide group of participants or go through deeper changes in beliefs or identity

³⁹For a review of literature on socialization see Kai Alderson, "Making Sense of State Socialization," *Review of International Studies* 27, no. 3 (2001): 415–433. On symbolic or social pressure from other states in favor of the acceptable behavior, see: Martha Finnemore and Kathryn Sikkink, "International Norm Dynamics and Political Change," *International Organization* 52, no. 4 (Autumn 1998): 887–917. On socialization from experience of participating in international organizations: David H. Bearce and Stacy Bondanella, "Intergovernmental Organizations, Socialization, and Member-State Interest Convergence," *International Organization* 61, no. 4 (Oct. 2007): 703–733.

as a consequence of these interactions. In much of the socialization literature, institutions are the independent variables, since they are viewed as the social contexts which are expected to have an effect on state cooperation or conflict behaviors, foreign policy approaches, or identities.⁴⁰ However, we can also think about how participation in international institutions can affect cooperation behaviors specifically with regard to new institutions. For example, the socialization process may lead states to be more likely to participate in institutions in the future, or design new ones that mirror the characteristics of the previous experience. The security sphere is a difficult case for this logic however, because different institutional forms come with different costs and implications for military secrecy. Even staying with normative framework, it is clear that any lessons on transparency or information sharing that are coming socialization would be competing with very strong existing norms of national sovereignty and secrecy in military culture.

Although socialization and learning might be less likely in the security context, it is still plausible to consider that it may occur. Some of the most prominent security institutions have been in place for decades and have many participants. For example, the IAEA conducts routine inspections of nuclear facilities in non-nuclear weapons states which are parties to the Nuclear Nonproliferation Treaty. The use of inspections is commonly accepted in this context, and it is plausible that states which form, for example, a regional agreement calling for additional nuclear restraints would design the agreement with inspections provisions

⁴⁰For some examples of different kinds of institutions as venues for socialization, see: Jeffrey T. Checkel, "International Institutions and Socialization in Europe: Introduction and Framework," *International Organization* 59, no. 4 (2005): 801–826; Alexandra Gheciu, "Security Institutions as Agents of Socialization? NATO and the New Europe," *International Organization* 59 (Fall 2005): 973–1012; Emanuel Alder, "Seeds of Peaceful Change: The OSCE's Security Community-Building Model," in *Security Communities*, ed. Emanuel Alder and Michael Barnett (Cambridge, UK: Cambridge University Press, 1998); Bearce and Bondanella, see n. 39; Brian Greenhill, "The Company You Keep: International Socialization and the Diffusion of Human Rights Norms," *International Studies Quarterly* 54, no. 1 (Mar. 2010): 127–145. Some of the empirical support for socialization has been found in what might best be characterized as an easy case for the theory, Europe. Alastair Iain Johnston, "Conclusions and Extensions: Toward Mid-range Theorizing and Beyond Europe," *International Organization* 59, no. 04 (2005): 1013–1044.

because these tools are seen as “appropriate” for this kind of agreement, rather than because they provide additional information which states see as necessary for observing compliance.

Thinking more specifically about adversarial security agreements, we can expect two types of socialization effects. First, when states participate in adversarial security agreements or when such agreements become more frequent internationally, this experience can have effects on perceptions of agreements and treaties as an appropriate tool for mitigating competition, as opposed to unilateral action. This may be a deeper change in approaches to institutional vs. unilateral tools, but may also be a more functional response to expectations of international reactions. If a state sees that formal peace agreements or cooperative restraint measures are supported by the international community as appropriate or responsible behavior, they may be more likely to try these options or at least demonstrate that they did not undermine an effort at a negotiated solution.

Second, as suggested with the IAEA inspections example above, socialization can contribute to more frequent use of certain information exchange provisions. The same “appropriateness” or adoption of “best practices” logic could apply to agreement forms in addition to just use of agreements in general. In addition to this argument, states may also start to re-apply similar provisions in multiple treaties because they have already developed a capacity to do so, either through expertise or technology. Arms control bureaucracies developed for one treaty may push domestically to keep their role in the next instance of treaty design. Innovations such as inspections technologies or special legal protections would be considered wasted if they were not reused in new treaties. States might become more acceptant of certain kinds of agreement provisions because they gain greater practical understanding on how these are designed and implemented. Increased know-how and familiarity on the processes of inspections or verification makes states (or key bureaucracies within them, such as the military) more likely to themselves promote these tools in the future. Socialization could thus have an impact on observed treaty forms because it makes certain steps the normal and

expected part of the treaty design process internally for each state.

Although international relations scholars have not explicitly applied a socialization explanation for agreements design in security, elements of the socialization story are at times apparent as the underlying logic of some policy approaches in arms control. Arms control policy experts often note how common practices developed between the US and Russia through the course of repeated cooperation and became accepted for how new agreements are structured and how they are carried out. Today, officials note the usefulness of Chinese participation in P5 discussions on verification and transparency, where the US and Russia also discuss their arms control processes on New Start.⁴¹ The idea is that by showing the Chinese how much the US and Russia have become used to sharing with one another when it come to arms control will make China more comfortable with these practices. If the Chinese were more accustomed to a higher degree of information sharing as being “normal practice” between participating counties, then they would be more likely to adopt these measures as well.

If this logic is right, then we would expect to see states pursue certain information exchange forms not because they see direct security benefits from them, or because they calculate the costs to be worthwhile, but rather because they see these measures as the appropriate tools for states engaging in arms control. This trade-off may be observable in individual cases studies, and a case where a seeming “unnecessary” information provision is adopted would be support for the socialization theory. Such provisions could include extra inspections or extensive report submissions that are seen by the participants as appropriate,

⁴¹See for example positive statements by US government officials on Chinese participation in the transparency discussions at the P5 meetings, for example: Remarks by Frank A. Rose Deputy Assistant Secretary, Bureau of Arms Control, Verification and Compliance Stockholm, Sweden January 17, 2014. A more detailed articulation of what is essentially a policy version of the socialization argument as it pertains to China and arms control information transparency can be found in: Andrea Berger and Malcolm Chalmer, *Great Expectations: The P5 Process and the Non-Proliferation Treaty* (Whitehall, London, UK: Royal United Services Institute for Defence and Security Studies, 2013).

but do not offer any additional information benefits. In a large- n context, a more general approach is needed, and the distinction with material benefits from information tools is even more difficult to draw. We would expect socialization effects to occur with repeated instances of cooperation between states: as practices of information sharing develop over time, new agreements will start with past accepted practices and build further measures on that foundation.

However, it is difficult to dis-aggregate “learning” as bayesian updating from an explanation based on socialization. Taking a bayesian updating view, if two states have previously cooperated on arms control, their next agreement could take a different form because the prior interaction allowed for them to gain better information about the adversary, not because they have established an accepted norm of cooperation. Changing arms control practices based on new beliefs about the adversary’s incentives is consistent with the theory I present. For example, if the game developed in the first part of this chapter were to be modeled as repeating between two states, we would have to incorporate the updating of beliefs based on compliance or non-compliance with the first treaty.⁴² In contrast, a socialization explanation suggests that states would pursue certain kinds of treaties not because they now saw them as materially advantageous, but rather because they see them as accepted norms.

To disentangle these explanations somewhat, we can look at how past experience of cooperation with one rival affects the way a state cooperates later with another adversary. There is no reason to believe that any information learned about the incentives of one cooperation partner should transfer over to beliefs about another partner. Therefore, any effect of prior cooperation that crosses from one bilateral relationship to another can be attributed to a socialization process about agreement design itself, particularly if it is being negotiated

⁴²Kydd (2005) takes this approach of looking at cases where cooperation in one instance allows states to update their beliefs about the type of the opponent in the next instance of the game. Kydd, *Trust and Mistrust in International Relations*, see n. 9.

by the same individuals or groups that negotiated the previous agreement.

Alternative hypothesis: States will be more likely to sign agreements with greater information sharing if they have previously had an arms control agreement with a third party state, and the decision makers or negotiators are the same individuals who experienced cooperation in the past.

Second, if states are becoming socialized in a common approach in agreement design, then we would expect to see a proliferation of similar agreement features, perhaps first within regions and then globally.⁴³ It is possible that this kind of diffusion of common practices does not cross subject areas, but rather spreads among agreements dealing with the same kinds of issues, such as agreements on banning weapons systems or agreements on access to territories or fortifications. Thus over time, we should observe an increase in the use of some information provisions, such as intrusive verification tools becoming more common. Or, treaties addressing similar issues, we should see a convergence over time in the kinds of information provisions included.

It is important to note that the alternative socialization story does not lead to straightforward competing hypotheses. I expect that to some extent these hypotheses will be upheld in the data, particularly on the spread of more intrusive features in general. Socialization may be one explanation for these trends, but there could be others. The idea of foreign inspectors on a state's territory is likely to be more common as norms of sovereignty diminish over time. In many cases, states are already allowing for some form of international information gathering, so insistence on practices of high national secrecy may be further eroding

⁴³This is similar to a convergence hypothesis tested in other studies. If there is a socialization process, then states' interests should be more similar over time. I apply this to security institutions to predict that there should be a convergence on provision types. Bearce and Bondanella, see n. 39.

over time. Or, as technology and resources grow, more intrusive provisions may become less costly for a greater number of states, leading to an increase in treaties with such provisions.

However, I demonstrate in the following chapters that looking at these socialization concepts is an interesting though incomplete. States may become more likely to consider certain treaty tools that become accepted practice in international negotiations, but they will not choose them when the costs of doing so are high. States follow common practice in treaty design when convenient, such as when key conditions (benefits of cooperation, costs of monitoring) make it possible to take templates from previous agreements. But achieving agreement on information exchange provisions is still subject to the interaction of the two states, their expectations of cooperation or cheating by the other side, and conditions under which those beliefs become less certain. The large-n analysis in chapter 3 includes a test of alternative hypothesis 1, which provides the clearest contrast to the expectations of my theory. Then the case studies in chapters 4 and 5 show that the design of information provisions does not seem to be strongly motivated by prior experience, and states also do not always mimic the information provisions of other treaties even in similar regions or on similar issues, such as contested territory.

2.5 Conclusion

In this chapter, I developed a theory on the conditions under which states are more likely to form agreements and when those treaties take the form of agreements with low level information exchange as compared to those with extensive monitoring provisions. Domestic political volatility is a critical factor which causes uncertainty in states' beliefs about their adversary's incentives to cooperate. This change in beliefs creates a window of opportunity for different forms of arms control agreements. In developing the theory, I identify types of domestic political volatility that are most relevant for foreign policy decision making and

are likely to affect treaty design choices: 1) changes in top level leadership which may bring new approaches to security and use of force and 2) pressure from public unrest which may herald new security vs. economy trade-offs in state policy.

The hypotheses which emerge from the model highlight the important relationship between beliefs about the adversary and the type of treaty states sign. I identify intuitive expectations of behavior with likely cooperators and cheaters and develop more surprising implications for agreement design under conditions of increasing uncertainty. I show that change towards the highly uncertain beliefs increases cooperation. The direction of that shift, from previous belief of low or high incentives to cheat, informs which treaty forms states pursue.

The following chapters test the theory against observed data of arms control agreements and the variation in their information provisions. Chapter 3 adopts a statistical approach which allows for systematic comparisons across the widest range of treaties. Chapters 4 and 5 focus on specific treaty cases in order to better trace the causal pathway from domestic politics to treaty design which I identify in the theory.

Chapter 3

Testing the Effects of Political Volatility: A Quantitative Analysis of Treaty Provisions

3.1 Introduction

The common image of arms control as a Cold War activity between superpowers obscures an extensive history of arms limitation mechanisms between states. Since 1800, there have been about twice as many security treaties as interstate wars.¹ States sign agreements to limit the risk of inadvertent war or reduce spending on military competition. This is the classic image of US and Soviet negotiators figuring out which missile systems to decrease by what numbers. Other types of agreements limit behaviors that might give states the advantage of a surprise strike. For example, some treaties limit whether a state can secretly carry out military movement by requiring prior notification of military exercises. States also

¹The Correlates of War data set records 95 interstate wars, 1823-2007. Meredith Reid Sarkees and Frank Whelon Wayman, *Resort to war: a data guide to inter-state, extra-state, intra-state, and non-state wars, 1816-2007* (CQ Press, 2010).

sign security treaties with numerous potential adversaries. In a regional context, treaties can limit a group of states from acquiring certain weapons technologies. Numerous wars, though not all, have ended with peace treaties which include arms limitations provisions that restrict the capabilities of one or more of the combatants.

Adversarial cooperation agreements include a range of provisions for assessing whether the agreement is being followed. For example the Chemical Weapons Convention (CWC) calls for states to submit reports on their activities, a neutral agency to send inspectors directly to sites to verify reports, and even creates a process by which states can request a special inspection in the event of suspected cheating by another convention member. Other treaties use tools such as bilateral inspections, indirect observation through satellites or other intelligence sources, regular reports on activities, treaty review conferences, advance notifications of specific events such as weapons testing, and ongoing monitoring of specific areas or activities. For security agreements, information exchange provisions make arms control more enforceable and less damaging if it fails. Yet different forms of the provisions vary both in how costly they are to implement and how much assurance they provide on treaty compliance. Existing analyses of arms control cases have not addressed this key variation in its forms.

This chapter presents a new data set on formal cooperation between adversaries and the forms of information exchange they employ. As developed in Chapter 2, I argue that domestic political volatility increases uncertainty about a state's incentives to cheat on, and, depending on prior beliefs about that adversary, makes either low or high monitoring agreements more likely. To test the theory, I conduct a statistical analysis which combines my new data on treaties and their provisions with existing sources on state characteristics and military capabilities. I test several operationalizations of political volatility, including internal events such as leadership, executive and cabinet changes, as well as data on demonstrations, riots, and strikes.

The chapter proceeds as follows: Section 2 briefly reviews the hypotheses. Section 3 presents the data on adversarial cooperation agreements and discusses the dependent variable: types of information exchange provisions. The section summarizes descriptive statistics on arms control treaties, their participants, and provisions. Section 4 presents the research design and discusses the operationalization of the main explanatory variable: domestic political volatility. Section 4 discusses the statistical approach, including the data structure and models used. Sections 5 and 6 show the statistical tests and discuss the results.

3.2 Hypothesis Testing

Chapter 2 set out a theory of domestic determinants of uncertainty in treaty design. Several implications of this theory can be tested through statistical analysis, while the more detailed causal pathways are explored in the following case study chapters. In particular, the large- n approach is most useful for testing the “transitional” hypotheses, which identify the implications for treaty and treaty provisions observations when there is a change from stable conditions to a situation where domestic political volatility occurs.

When an adversarial partner experiences domestic volatility, uncertainty about that state’s incentives to cooperate increases, leading to more arms control agreements with extensive information provisions. This happens for two reasons, depending on the beliefs states hold about their adversaries. When states believe an adversary has low incentives to cheat on an agreement, greater uncertainty means a higher risk that this assessment is wrong. To mitigate that risk, states have to pay for higher monitoring. When states believe an adversary has high incentives to cheat, greater uncertainty suggests that the adversary may not be a cheater after all and creates more opportunities for some –albeit very careful and well monitored– cooperation. In other words, domestic political volatility means that formerly “low cheat incentives” adversaries now need to be monitored more closely, and former “high

cheat incentives” adversaries can now be considered as possibly cooperative partners.

H1: When a state believes an adversary has low incentives to cheat, we are likely to see few agreements. If domestic volatility occurs within the adversarial state, agreements with low information exchange will be more likely.

H2: When a state believes that an adversary has high incentives to cheat, we are likely to see few arms control agreements. Domestic volatility will make agreements with such partners more likely, but agreements will have high information exchange to deter cheating.

H3: Combining the logic of H1 and H2, when domestic political volatility occurs, states will be more likely to sign adversarial cooperation agreements in general.

As discussed in Chapter 2, there are several possible sources of domestic political volatility which may raise uncertainty about a state’s foreign policy incentives. First, public domestic unrest raises uncertainty because of at least two possible foreign policy relevant government responses, a reallocation of resources for guns vs. butter issues, or an effort to quell unrest thorough diversionary aggression or a new foreign policy focus. Second, changes in the upper echelons of state power, either in the leadership or the cabinet, raise the possibility of new policies that will be either more conciliatory or more aggressive towards other states. By the same token, new leaders present a less certain situation in terms of foreign policy decision making than those who have been in power for some time. When any of these sources of domestic volatility occur, uncertainty increases and we would expect to see a higher likelihood of arms control agreements than when these conditions are absent.

3.3 New Data on Arms Control Treaties

Little data on adversarial cooperation agreements has been systematically collected and analyzed by political scientists. In contrast, there have been extensive efforts to catalog the use of military force between adversarial states as well as alliances between friendly states. The data presented in this chapter represents the first attempt at systematically collecting cases of treaty-based cooperation to limit adversarial behavior and coding agreement provisions. Previous efforts using arms control treaty data have been limited in scope and incomplete.² The data both identifies all observed cases of adversarial cooperation agreements, and characterizes their information sharing provisions into several categories.

The goal of my data collection is twofold. First, by tracking the number and shape of arms control agreements over time, the data set reveals trends in agreements over time, and for the first time characterizes the diversity of their forms. Second, the data set allows for statistical analysis using variables from existing international relations data sets.³

²Morrow and Jo (2006) use data which includes some arms control treaties, but their efforts focus on agreements that regulate the conduct of conflict, including a number of which are more about norms on treating civilians than on mitigating security threats. James D. Morrow and Hyeran Jo, “Compliance with the Laws of War: Dataset and Coding Rules,” *Conflict Management and Peace Science* 23, no. 1 (2006): 91–113. Barbara Koremenos’s data set includes a sample of agreements drawn from the UN Treaty Database, and does include some relevant treaties of cooperation between adversaries. However, the sample also picks up on security related treaties with different goals, such as the “Security Agreement concerning certain exchanges of secret information” (France–Sweden, 1973) or the “Exchange of notes constituting an agreement relating to mutual security” (US–Italy, 1952) which are treaties between friendly states to coordinate mutual behaviors (such as the handling of classified information) rather than to limit arms or threatening behaviors. Barbara Koremenos, “The Continent of International Law,” *Journal of Conflict Resolution* 57, no. 4 (2012): 653–681

³The coding strategies, formats, and inclusion rules that I develop and discuss in this chapter make this new data compatible with COW (militarized disputes, wars), ATOP (alliances), and other existing data sets. The comparability with existing data allows for a new analysis of the determinants of treaty design and also opens the door for future research on both alternative theories of treaty design and on the effects of arms control treaties on interstate conflict or further cooperation.

3.3.1 Sources and process

But while it is clear that treaty forms vary, the range and frequency of these provisions requires a more comprehensive collection. Many individual arms control agreements have been extensively studied by political scientists and historians. Some, like strategic nuclear reductions during the Cold War, have volumes dedicated to their negotiations and outcomes. In contrast, we know relatively little about the history of other agreements, particularly those involving non-European states.

To address this gap in data, I first create a collection of full texts for all agreements between adversarial states which include arms control provisions. Arms control or disarmament may be the focus of the treaty, or it might be simply one piece in a treaty addressing other issues as well. The collection of arms control treaties includes agreements which: 1) establish a limitation (in quantity or quality) of armaments or military personnel; 2) restrict movement, basing, or fortifications on a select territory; 3) restrict or ban either the use of certain weapons or certain military activities during a future conflict, 4) call for disarmament or demilitarization of troops or territory;⁴ 5) limit states' abilities to launch a surprise attack or build new capabilities in secret. These are all activities or capabilities which have the potential of giving one adversary an advantage in conflict, and the agreements seek to mitigate states' competition over attaining these advantages.

I include war termination and ceasefire agreements which include arms control provisions, and confidence building measure (CBM) agreements which often make fewer demands on participants, but still limit first strike incentives and secrecy in military development. These two types of agreements are not commonly referred to as "arms control" by today's policy practitioners, but including them as adversarial cooperation agreements is not very controversial – existing research often notes that the Versailles Treaty is a form of imposed

⁴I do not count agreements which simply define borders between two states without including additional terms of what may or may not happen along those borders.

arms control, or that CBMs between the US and USSR or between India and Pakistan are smaller scale controls. In fact, several arms control compilations include the Treaty of Versailles, but do not include other war termination agreements which likewise have provisions for demilitarized zones or demobilization of troops post war, such as the Korea Armistice which establishes a ceasefire, a carefully patrolled demilitarized zone, and calls for further peace talks. Such inconsistencies in the available treaty collections further highlight the need for more systematic data collection and analysis.

There are several compilations of arms control treaty texts available, both from independent scholars and government agencies.⁵ I use the most comprehensive of these, Jozef Goldblat. *Arms control: the new guide to negotiations and agreements*. London, UK: Sage Publications, 2002, as a starting point for my collection, and then draw on the UN Treaty series, NGO sources, government foreign ministry records, parliamentary records, and printed histories for full texts of approximately 250 treaties from 1800-2010 which have been referred to as having “arms control” or “arms limitation” provisions by historians or policy experts.⁶ I then remove about 30 texts from the collection which are either parts of other treaties or are hard to classify as a limitation on security rather than a humanitarian issue. These agreement texts represent the full universe of arms control treaties rather than a sample of agreements.⁷

⁵Some good examples include: Thomas Graham and Damien J. LaVera, *Cornerstones of Security: Arms Control Treaties in the Nuclear Era* (Seattle, WA: University of Washington Press, 2003); M. Cherif Bassiouni, ed., *A Manual on International Humanitarian Law and Arms Control Agreements* (Ardsley, NY: Transnational Publishers, 2000); Trevor N. Dupuy and Gay M. Hammerman, *A Documentary History of Arms Control and Disarmament* (New York, N.Y.: T.N. Dupuy Associates, 1973)

⁶I often used one set of sources to identify relevant treaties (histories, anthologies, NGO reports and websites) and then a second set of sources to obtain the full text of the agreement (government foreign ministry and parliamentary records, printed collections, UN Treaty Series and other online treaty databases.) There may be some concerns that certain treaties, such as agreements between Russia and China, are not well recorded in Western sources and might be missing from my analysis. I have searched through Russian Ministry of Foreign Affairs treaty archives as well as secondary source literature for such agreements, and found several available only in Russian. These are included in the collection and coded as well.

⁷Here I depart from previous empirical work on treaty design, which has relied on a randomly drawn sample of

To code the treaties, I developed a codebook to identify a wide range of information exchange provisions. For example, I include codes for reporting to state parties, reporting to an independent agency, reporting in response to an inquiry, and reporting with details specified in the agreement. The codes are then combined into four distinct categories so that, for example, all the reporting related codes listed would go into the broader “reporting” code. The detailed coding strategy allows these master categories to be adjusted and recombined, both for the current project and for future analysis.⁸ In addition to using a codebook, I compared my coding of the treaties with descriptions of their provisions in other studies. While not all treaties are discussed in existing historical work, several sources include assessments of at least selected treaties.⁹ For these treaties, I check that my coding is consistent with other expert assessments.¹⁰

treaties from the UN Treaty series. Barbara Koremenos, “Contracting Around International Uncertainty,” *American Political Science Review* 99, no. 04 (2005): 549–565; Barbara Koremenos, *The Continent of International Law* (MZES, 2009). Experimentation with the UN Treaty series revealed that the security, arms control and disarmament categories in UNTS are inconsistent, with some treaties labeled as security related which are not, while some treaties (such as those on maritime limitations) are only sometimes included. There are several advantages to constructing the full case universe of arms control agreements. First, sampling from a broader pool of security-related agreements creates comparisons between agreement that are different in goals and types of participants, and limits our ability to draw inferences about the particular cooperation problem faced by adversarial states. Second, the limited number of agreements allows for detailed study and coding of each treaty’s various design features. The data summary presented here focuses on the information exchange provisions, but other features of these treaties are important for study as well, including arbitration mechanisms such as consultative commissions, or reliance on external agencies, such as the UN or regional institutions, to administer agreements.

⁸I hand code the treaties. Automated coding approaches usually require a “training set” of 200-300 documents, which is already the size of my full collection.

⁹In addition to the sources already noted in the prior footnote, these also include: Dupuy and Hammerman, see n. 5; Serge Sur, ed., *Verification of Current Disarmament and Arms Limitation Agreements* (Aldershot, England: Dartmouth Publishing Company, 1991).

¹⁰A note on coding: There are occasional cases where a treaty was negotiated, and then another portion of the treaty was negotiated at a different time. In such cases, I code the texts as two treaties because while they have the same purpose and are related, they were likely negotiated under different conditions. A good example is the Threshold Test Ban Treaty, which was signed in 1974 with a Protocol. It was not ratified until 1990, at which time a different Protocol was negotiated. However, the parties had agreed in 1976 to “act consistently, with the 150-kiloton threshold... pending entry into force.” Graham and LaVera, see n. 5. During the period between signing and ratification, there were US claims that the Soviet Union was exceeding the threshold –or essentially cheating on the agreement. This shows that even though the treaty was not ratified, the parties were using it as a commitment to cooperation, and as standard for

The following subsections detail the coding of the dependent variable as well as how I operationalize the key independent variable in the theory.

3.3.2 Dependent Variable: variation in information provisions

While provisions vary in terms and phrasing, conceptually I group them into types where information is given by one side to the other (low monitoring) and information that is collected by one side about the other (high monitoring). The division represents the clearest line to reflect: the ordering from low to high level of intrusiveness; the implications for the amount of information that can be gathered; and the costs associated with the type of provision.¹¹

However, to get more descriptive detail about the range of treaty types, I start with four categories which group provisions with approximately the same degree of intrusiveness or potential to provide information about the adversary. Treaties often contain multiple mechanisms, for example by calling for both verification inspections and self reporting. In the raw text coding, both levels of provisions are coded for a treaty. However, in the data

identifying restraint vs. competition. The 1990 Protocol includes far more information exchange than the 1974 version, including highly intrusive on-site inspections. It is not the case that intrusive inspection methods or on-site measurement tools were simply unavailable in 1974. Methods very similar to the 1990 Protocol are actually included in the 1976 Peaceful Nuclear Explosions Treaty. For the purposes of my database, I code the 1974 TTBT treaty and its protocol as one treaty observation and the 1990 Protocol as a separate observation. The second document involved a new negotiation, and was conducted under different political and technological conditions.

¹¹The distinction between information given vs. collected is my own, and is intended to capture the clearest and most intuitive distinction for ordered groups. Intrusiveness, information, and cost, are all lower for provisions where material is given rather than for provisions that call for states to collect information from the adversary. However, this idea is inspired by the ways other arms control experts have grouped provisions. For example, Serge Sur, who has written a number of studies focused specifically on verification tools, groups provisions as “intrusive methods (i.e. methods implying the physical presence of either a human or an instrument on a State’s territory) and non-intrusive methods (such as different remote-sensing techniques, particularly observation by satellites, as well as other non-intrusive fact-finding methods such as perusal of scientific literature).” Sur also adds that alternative distinctions could include “hard objective methods (i.e. information collected by technical means such as satellites, on-site inspection or documentary control) and soft methods (i.e. information collected through political consultation mechanisms)” Serge Sur, ed., *Verification of Disarmament or Limitation of Armaments: Instruments, Negotiations, Proposals* (New York, N.Y: United Nations, 1992), 209–210.

processing I select only the most intrusive level provision to characterize each treaty. Each treaty therefore only has one dependent variable coding for information provision type.¹²

A brief description of the categories:

1. Information given – Low information exchange

- None: Treaties that have no reference to even minimal information exchange are coded as none. Treaties that include *only* voluntary measures are also coded as none. Such provisions include voluntary exchanges of scientific information and encouragement to voluntarily invite observers from another state.
- Reporting and Notification: The unifying concept of all provisions in this category is that information is given by one state, rather than collected by the other. The treaty does not provide a mechanism for checking the information. States might have their own intelligence means for checking reports, but it is not a mechanism mentioned in the treaty. Provisions included in this category are: mandated self-reporting on treaty compliance or implementation to the other state or to a neutral agency, including both general requests and provisions outlining exactly what information needs to be submitted; provisions requiring state to notify of

¹²The ATOP alliance data set serves as a general model for my collection of arms control treaty data. Brett Leeds et al., “Alliance Treaty Obligations and Provisions, 1815-1944,” *International Interactions* 28, no. 3 (2002): 237–260. The data contains not only information on agreement members and dates, but also on specific provisions drawn on a close reading of the treaty text itself. Like ATOP, I code only terms that treaties call for, rather than terms as implemented following the treaty. In some cases, both with alliances and arms control agreements, provisions were not followed after the agreement was signed, while others were adapted or evolved over time. Coding agreements as written presents a problem for some studies on the effects of alliances on conflict or deterrence, as for those types of questions where the coding might not capture the actual signal being sent by alliance implementation, or the actual addition in capabilities that might come from the relationship. However, for my question on agreement design, the focus is on what states intended and agreed to at the negotiation stage, making agreement texts the perfect source of data. Brett Ashley Leeds, “Do Alliances Deter Aggression? The Influence of Military Alliances on the Initiation of Militarized Interstate Disputes,” *American Journal of Political Science* 47, no. 3 (July 2003): 427–439; B.A. Leeds and S. Anac, “Alliance institutionalization and alliance performance,” *International Interactions* 31, no. 3 (2005): 183–202.

upcoming events or changes, such as missile launches or numbers of military facilities; provisions for ongoing communication or meetings between the parties having to do with the implementation of the treaty.

2. Information taken – High information exchange

- Observation: These provisions include ways in which one side (or external agency) can look at the activities of the other. For example, some treaties call for noninterference with National Technical Means, which means that states may not try to hide certain military assets or activities from the satellites of the other states. Other treaties call for occasional visits by the other party or outside agency to observe some military activities or reductions. Also included in this category are joint exercises, which give states an opportunity to observe one another's military activities. Finally, the most significant type of provision in this category is a call for monitors or personnel to observe ongoing activity in a certain area.
- Verification: The verification category includes treaties where information is collected by reporting and monitoring provisions, and then checked, usually through on-site inspections by the the other party. Technically, verification is not a set level of information exchange. Verification is a process which allows a state to assess whether the other side is in compliance with the treaty.¹³ However, the amount of information necessary to make such an assessment, or the degree of certainty a state requires to be assured of compliance can vary by state and circumstance. My code for verification captures a more intrusive version of observation, particularly methods which challenge state sovereignty. Such tools include on-site inspections,

¹³Amy Woolf, *Monitoring and Verification in Arms Control*, vol. 7-5700 (Washington, DC: Congressional Research Service, Library of Congress, 2010).

challenge inspections, an outside agency or other party having extensive access to military sites where demilitarization or disarmament is ongoing (such as for example the UNMOVIC commission following the Iraq war).

For statistical analysis I use a three category version of the dependent variable: a “no treaty” category and the four codes summarized as two categories to create the clearest distinction between low and high information exchange. The data on independent and control variables is known to be fairly noisy, so a sharper and simpler dependent variable maintains distinctions which may otherwise be obscured by noisy data.

The table and figures below summarize the distribution of agreements and their information exchange provisions.¹⁴ Table 3.1 details the number of treaties in each of the information exchange categories and identifies several examples. Treaties often contain multiple mechanisms, for example calling for both verification inspections and self reporting. The counts in all tables reflect the number of treaties which have each level of information exchange as their *most* intrusive provision.

3.3.3 Treaty participants

In coding treaty participants, the most important challenge is dealing with multilateral treaties. The issue of multi-party events comes up for studies of conflict as well, as of course numerous wars involve many state parties. However, in that data, multilateral events are simply turned into a collection of bilateral events between all members, and as a consequence

¹⁴There are two treaties in the 1700’s which I drop in these descriptive statistics. There are 19 treaties in the 1800’s. Treaties before 1816 are not used as 1816 is the first year of coverage for COW data. Further, the coverage of other explanatory variables in some cases does not cover the earlier time periods, so the empirical analysis relies on a more limited set of treaty data. Range restrictions due to data limitations are noted in the next section.

Table 3.1: Number of Treaties by Information Provision Types (Detail)

		Number	Examples
Low	No info provisions	50	Rush-Bagot Agreement, Washington Treaty on Submarines & Noxious Gases, Declaration of Ayacucho (Latin America); Moscow Treaty (SORT); various joint declarations
	Reporting	86	most India-Pakistan CBMs (nuclear accidents, flight testing), Incidents at Sea agreements, Biological Weapons Convention; inter war naval arms control;
High	Monitoring	35	Open Skies Treaty, Threshold Test Ban Treaty, Israel -Syria/Jordan/Egypt/Lebanon 1949 armistice; Karlstad Convention (Sweden/Norway); Nairobi Protocol
	Verification	53	Treaty of Versailles, Intermediate Nuclear Forces Treaty, START I, Chemical Weapons Convention, Nuclear Nonproliferation Treaty, Treaty of Tlatelolco, Korean War Armistice
	total number of treaties	227	

conflicts such as the two World Wars are over-represented as numerous bilateral cases. In the case of adversarial treaties, numerous agreements have over 50 and even over 100 members. Instead of automatically turning all multilateral treaties into bilateral events, I only count some states as treaty “designers,” focusing on those which are most likely to have something to gain or lose from cooperation, and therefore are likely to have an impact on treaty provision choices. In most cases, not all 100 participants had any influence on the form of the treaty, and are often joiners into a negotiation that is largely controlled by more powerful actors.

I apply a systematic cut-off rule for multilateral treaty participants. For treaties with more than ten participants, I only count the ten most powerful states, as ranked by their CINC scores. This method narrows down the participants to states which are most likely to both have the negotiating leverage to influence the shape of the treaty, and the military capabilities that the treaty seeks to limit.¹⁵ Indeed, historical evidence strongly supports

¹⁵Ideally, we would want to code the treaty designers or active negotiation participants based on the historical details of each case, identifying the states that saw different benefits and drawbacks from specific treaty

Table 3.2: Treaties Information Provision Types and Members

Type of Treaty	Bilateral	Small multilateral (3-9)	Large multilateral (10+)	Total
Low Monitoring	66	26	44	136
High Monitoring	32	11	45	88
Total	101	37	89	227

the assumption that in large multilateral treaties, both the intended targets of limitations – the dyad pairs seeking to restrain one another – and the treaty designers are usually only a few states. For example, the US and Russia were often the driving forces in the designs of major multilateral treaties such as the Nuclear Nonproliferation Treaty and the Biological Weapons Convention, often with close coordination by the US with its UK and French allies. Table 3.2 shows the breakdown of treaties by information provisions and participant sizes.

Figure 3.1 shows the range of state participants in arms control treaties. Unsurprisingly, the major powers, and particularly US and Russia, are treaty designers in the largest number of arms control agreements. However, even despite counting only “treaty designers” in large multilateral agreements, the map also shows that the majority of states have at least participated in a few treaties. For less powerful states that do not play a role in the large multilateral agreements, these include bilateral treaties or regional security agreements.

Looking at the types of treaties over time as in Figure 3.2 reveals several trends. First, while treaties with no information exchange are more common during earlier time periods,

forms. While resource limitations make case studies on each agreement beyond the realm of the present study, this would be an important goal for future research. After implementing the cut-off rule, I spot checked several treaties for face validity of this method. For example, in a number of cases states like Fiji end up excluded from the list of the participants. As opposed to narrowing to only great power participants for multilateral treaties, the CINC ranking method allows for a systematic approach to treaties which do not include great powers, or where it is possible that regional powers were also involved in treaty design (such as with regional security treaties).

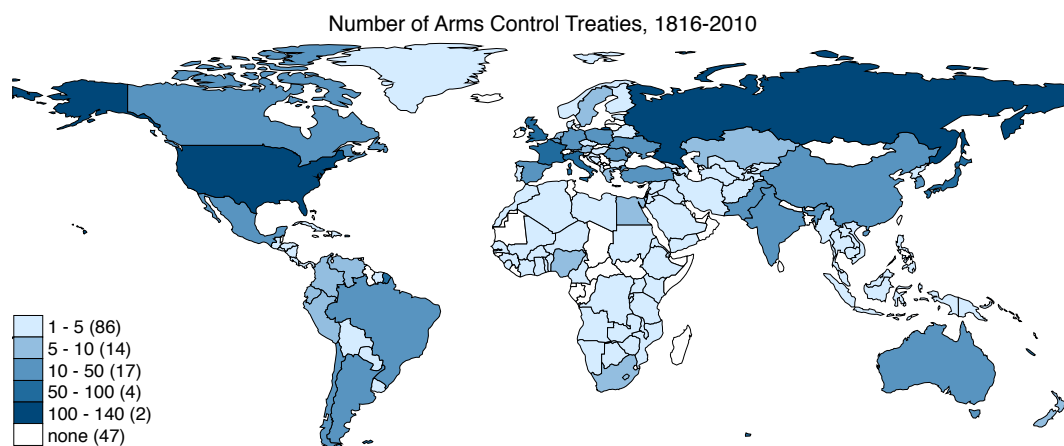


Figure 3.1: State Participants in Arms Control Treaties by Provision Type

they do still occur after 1945. The years immediately following the end of the Cold War show a spike in the number of treaties signed, but the trend towards more agreements also lasts throughout the 1990's. It is also not the case that some countries have participated exclusively in only certain kinds of agreements. Out of the most powerful states participating in arms control agreements, all have signed treaties with no monitoring, limited information exchange provisions, and intrusive verification.

3.3.4 Dyadic observations

For the statistical analysis, I convert the treaty data into dyadic form where each observation is a pair of states signing a certain type of treaty. Dyadic interactions can better reflect the strategic nature of signing a treaty, and closely fit the theoretical view of treaties as outcomes of the attributes and beliefs of two actors.¹⁶ The theory developed in Chapter 2 suggests

¹⁶Other scholars likewise characterize arms control in terms of dyadic interactions. In the case of an arms control failure and a conflict breaking out, states will most often ally themselves as to form two sides of a conflict. Richard K Betts, "Systems for Peace or Causes of War? Collective Security, Arms Control, and the New Europe," *International Security* 17, no. 1 (Summer 1992): 5-43. However, states may be unsure of how such alignments will form in the event of a conflict, and so have an incentive to restrain all possible adversaries.

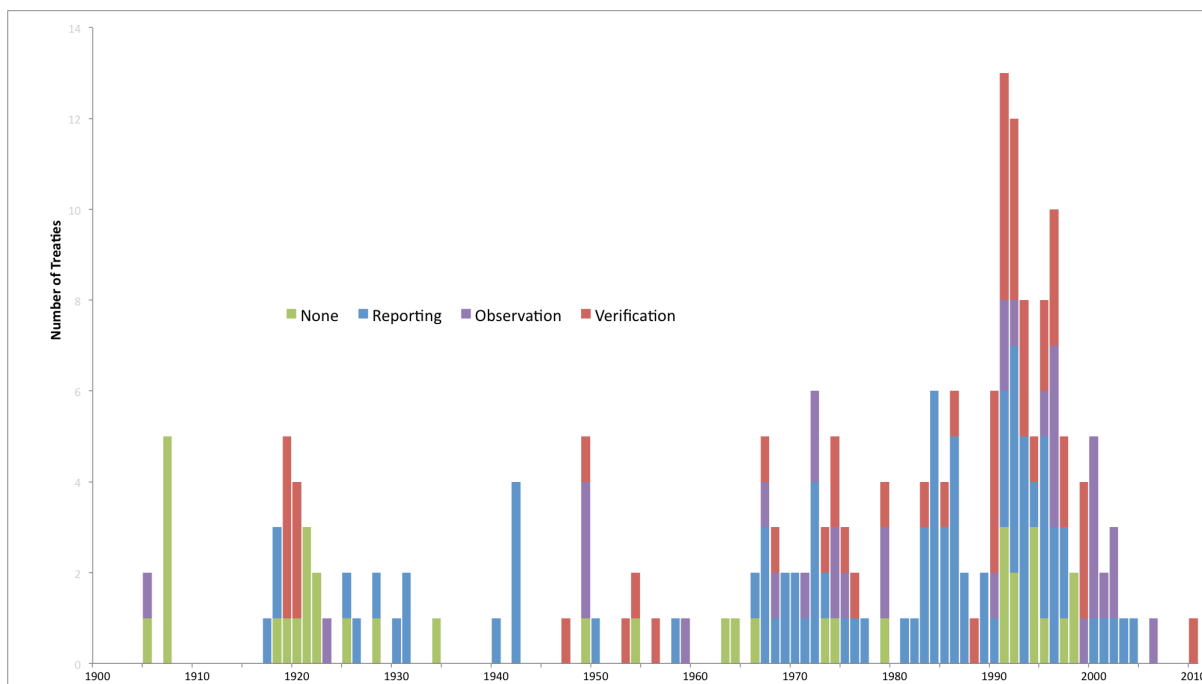


Figure 3.2: Arms Control Treaties over Time

that states which might compete though conflict could also pursue a different route for managing that competition and engage in treaty-based cooperation. The parallel between states engaging in conflict and states signing an arms treaty is useful for the research design as well. Following the research design used by most scholars of war and conflict, the unit of observation is a pair of states in a given year with a new outcome variable of treaty type (time series of dyad years). In interstate conflict research, each year the pair of states can be observed as engaging in a military dispute or being at peace. Characteristics of those states and of the international system are used to predict the probability or intensity of a dispute. I am essentially replacing the militarized interstate dispute (MID) variable commonly used in IR with my newly constructed “treaty type” variable.

In creating the dyads, I incorporate the fact that some treaties are multilateral in terms of their designers, but the limitations are structured as being between two sides. For example, states A, B and C may be members of a treaty, but the treaty is an agreement

between states A and B together against C. In this case, a dyad between A and B would not accurately reflect the nature of the agreement. In many cases, treaty tests explicitly identify parties on one side and parties on the other. For these treaties, I create dyads only between states on opposite sides of the agreement, so A-C and B-C, but not A-B.¹⁷

Figure 3.3 shows the dyadic view of the treaties, identifying the number of pairs of states which sign a treaty in a given year. As in all the statistical tests that follow, the provision categories are collapsed into two – low and high degree of information exchange.

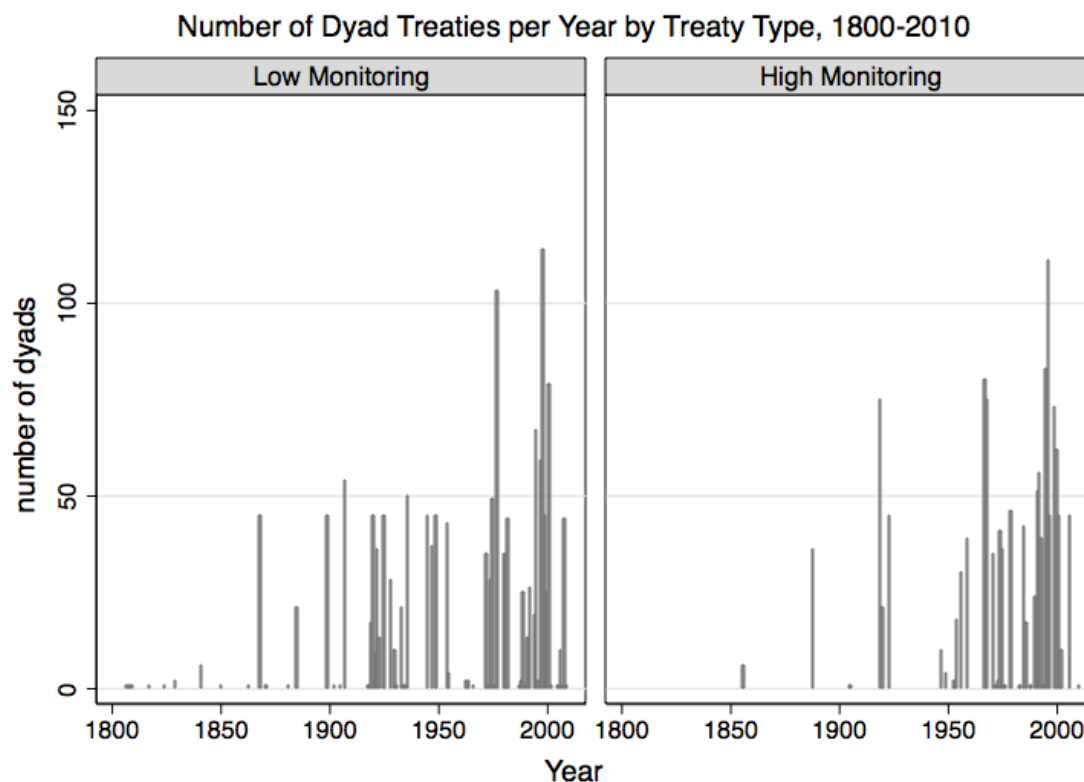


Figure 3.3: Dependent Variable Treaty Coding, Dyadic View

¹⁷I do not make any assumptions about which states are on one side of an agreement, and the coding is based only on the text of the treaty itself. For more on the dyadic data, see the Data Structure section below.

3.3.5 Data set summary

The data presented in this section provides the first look at the record of adversarial cooperation between states. Like conflicts, adversarial cooperation treaties are relatively rare international events. However, they are more numerous and more globally widespread than the contemporary policy use of the term “arms control” suggests.

Even though arms control is not a recent invention, the data set demonstrates several important differences in early vs. more modern treaties. First, there are more treaties post-WWII than in the previous period. It is unlikely that earlier treaties were simply recorded less often, but it is possible that earlier adversarial cooperation often did not take the form of formal treaties. It is also likely that the increase in international treaties reflects broader changes in the international system in the 20th century, including the end of colonialism, internationalism through the League of Nations and UN system, and the nuclear age. Second, modern treaties rely more openly on tools of spycraft for treaty monitoring and verification. Treaty provisions calling for states to use “national technical means” to monitor compliance are a diplomatically polite way of saying that states can use their satellites to observe foreign territory. It is possible that earlier treaties likewise relied on states’ own “means” to monitor compliance, but explicitly referring to such methods was seen as violating sovereignty and international law. In the modern period, satellites, advanced seismology equipment, or atmospheric testing all increase a state’s baseline ability to observe its adversary and affirm treaty compliance or cheating without additional treaty mechanisms, but treaties also more frequently acknowledge the use of these existing capabilities for information exchange.

There is also some evidence that means of monitoring using territorial intrusiveness have become more acceptable in the modern era than they were previously, possibly due to evolving conceptions of sovereignty. On-site inspections seemed to have originally been reserved for states which lost a conflict and were essentially forfeiting some of their sovereign rights. We do see this practice continuing across time – inspections of Iraq following the Gulf

War can be readily compared to inspections of Germany following WWI.¹⁸ But inspections are also more frequently used by equally matched states. However, the observed trend towards greater intrusion into territorial sovereignty may also be limited to certain situations and characteristic of certain dyads. After all, some adversarial states, such as India and Pakistan, have never agreed to this type of information exchange, even though they can observe plenty of examples of it operating in US-Russia and other European agreements.

Finally, modern treaties have focused more explicitly than previous measures on one type of security threat – nuclear weapons. With the advent of nuclear weapons, states faced sudden existential threats, arguably making both arms racing and arms restraint more appealing. To some extent though, the apparent focus on nuclear weapons is also simply a reflection of the threat faced by the period’s dominant dyad, the US and USSR. Cooperation between these two adversaries sought to address their most pressing security threat. Without nuclear weapons, we might imagine that the US and USSR might have had more conventional weapons treaties, or limits on maritime forces.

In the quantitative analysis presented in the next sections, I seek to control for several of these factors which might contribute to trends in treaties over time. The most general hypothesis test – Hypothesis 3 on the overall likelihood of treaties– as well as the cross tabulation analysis takes into account the full range of the data, looking at both pre-WWII and modern treaties. The second statistical analysis, testing the effects of domestic volatility on different treaty forms, is limited to the 1945-2010 time period. In addition to making use of the most available data on independent and control variables in this range, the limitation also controls for longer term trends which may affect treaty design, most notably changes in ideas of state sovereignty and major shifts in technology.

¹⁸Fred Tanner, ed., *From Versailles to Baghdad: Post-War Armament Control of Defeated States* (Geneva, Switzerland: United Nations, 1992).

3.4 Research Design

To study the determinants of adversarial treaties and their design provisions, I combine the new data on treaties with several sources of existing data on characteristics about states and their international interactions. This section outlines the independent variables I use to test my hypotheses, a number of other characteristics of states which have arms control treaties, and the data structure for hypothesis testing. As a preliminary step to statistical approaches, this section shows several cross tabulation results of key variables, which gives both an early suggestion of the effects of these factors on treaty types and supports the inclusion of some variable to control for likely determinants of treaties.

3.4.1 Independent Variables: beliefs and domestic political volatility

As outlined above, I hypothesize that both the occurrence of treaties in general and the type of information exchange provisions we observe in an arms control agreement should depend on whether one or both of the states involved is undergoing political volatility domestically. I test several operationalizations of the political volatility variable, focusing both on top down sources of volatility operationalized as leadership changes and bottom up sources focused on social unrest.

To create the variables, I use the Cross-National Time Series (CNTS) data set.¹⁹ A number of studies have used the CNTS data to capture political volatility or instability, but there is no consensus on the best approach or best variables to use. To list a few: Sasikumar (2009) codes a measure of political instability using a weighted index of CNTS variables, combining general strikes, demonstrations and government crises; Ghosn (2011)

¹⁹Arthur S. Banks, *Cross-National Time-Series Data Archive*, 1815-2010, Databanks International (Jerusalem, Israel, 2011).

uses demonstrations and government crises as separate variables; Brunetti and Weder(1998) use number of changes in the national constitution as a measure of policy uncertainty; Roe and Siegel (2011) use government crisis with a 1 percent decay rate to assess the impact of crises over a 30 year period.²⁰ The variables build on ideas developed in these prior studies and adapts the measures to better fit the volatility concepts I seek to capture with this measure.

Demonstrations, Riots and Strikes: Demonstrations, riots and political strikes are indicators of public pressures that could cause a government to make changes in its policies, particularly in allocating resources to “guns vs. butter.” The issue here is not necessarily how the government responds, but the signals that these events send to an adversary about pressures influencing the government’s future policies. Observing such events an adversary could become less certain in its preexisting assessment of the state’s incentives. I construct a binary variable which is coded 1 if more than 1 demonstration, riot, or strike occurred in either dyad state in the last year, and 0 otherwise.

The goal is to capture events which would be substantial enough in terms of magnitude or frequency as to be observable internationally as domestic pressures. Since the data does not record the sizes or issue areas associated with these social unrest events, I rely on their frequency. Coding more than 1 event per year is intended reduce noise and count only cases which might in fact be interpreted as public pressure on government policy, rather than an occasional or sporadic public outcry. Indeed, in the data, a sizable minority of states have

²⁰Karthika Sasikumar and Christopher R. Way, “Testing Theories of Proliferation in South Asia,” in *Inside Nuclear South Asia*, ed. Scott D. Sagan (Stanford Security Studies, 2009); Faten Ghosn, “Domestic Unrest and the Initiation of Negotiations,” *International Negotiation* 16, no. 1 (2011): 69–85; Aymo Brunetti and Beatrice Weder, “Investment and Institutional Uncertainty: A Comparative Study of Different Uncertainty Measures,” *Weltwirtschaftliches Archiv* 134, no. 3 (1998): 513–533; Mark J. Roe and Jordan I. Siegel, “Political Instability: Its Effects on Financial Development, Its Roots in the Severity of Economic Inequality,” *Journal of Comparative Economics*, no. 39 (Feb. 2011): 279–309

only one demonstration in any given year (9% of the observations) while fewer experience more than one event. Approximately the same frequency levels apply for general strikes and riots, suggesting that some level of unrest is normal, but far fewer cases experience multiple events so this heightened level is more likely to be observed as a departure from normal domestic political conditions.

Cabinet and Executive changes: A signal of policy change can come from upper level shifts within the government. The executive may make changes to government structure in response to public pressures, internal pressures such as competition among elite groups, or to reflect changes in the beliefs of new leaders. These leadership shifts raise uncertainty about foreign policy because new leaders can either choose to continue the policies of their predecessors, or pursue new directions. As discussed in Chapter 2, this top level policy can come from leaders themselves or from the influence of other key actors in senior positions, so it makes sense to look for volatility in both areas.

To capture top down volatility, I construct a measure using CNTS data on cabinet and executive changes. The variable is coded 1 if there was at least one executive change or more than one major cabinet change in a given year in one or both of the dyad partners, and 0 otherwise. Again, counting only more than one cabinet change is an effort to remove some noise from this variable, and capture only moments that suggest a serious possibility of changes in foreign policy that would be observed by another state.²¹ However, changes in the executive happen less frequently, are more likely to always be observed by other states, and are more likely to each be indicators of an increase in uncertainty.²²

²¹A cabinet change in CNTS is defined as over 50 percent of the cabinet replaced. About 40% of observations experience one cabinet change, which suggests that a relatively high degree of cabinet turnover is part of normal political affairs, and likely not a sign of political volatility. Only about 5% of the observations experience more than one cabinet change, which suggests that multiple changes would in fact be interpreted as associated with a possibility of new policy direction.

²²I also code the variable as 0 if there were over 4 of either cabinet or executive changes in one year. Such

In addition to peaceful or normal types of domestic volatility, these measures are intended to capture moments at the end of more unstable periods such as revolutions or civil wars, and avoid including these violently unstable events themselves. Other variables available in the CNTS data, such as revolutions, guerrilla warfare, and even government crises²³ are indicators of instability more serious than “volatility.” Such events threaten the very future of the government, and are likely to make international cooperation less likely for several reasons. When these events occur, a government is likely to turn its attention on responding to an immediate threat at home, rather than looking to international cooperation as a possible solution.²⁴ At the same time, from the adversary’s perspective, during such changes it may not even be clear who in the state government has the authority to be signing promises of arms limitation, so adversaries are likely to wait till the right interlocutor can be identified. At lower levels of volatility (or what other studies call “policy uncertainty” or policy volatility), the government is still in control of determining policy and there are incentives to cooperate internationally rather than wait for the unrest to abate and incur the costs of noncooperation. At the end of instability periods such as a revolution or a coup, when the government or challenger group gain control, may also be moments of new foreign policies emerging, but here we again want to measure the new government coming in rather than the revolution starting.

Finally, an important benefit of these three operationalizations of political volatility is that in each case, the explanatory variable is not defined in a way such that the definition

a high frequency of leadership turn over suggests that the government would not have the capacity to actually conduct international diplomacy. In practice, very few observations have such a high level of leadership turn over, under .5% for both cabinet and executive measures.

²³ “Government crisis” is defined as “any rapidly developing situation that threatens to bring the downfall of the present regime excluding situations of revolt aimed at such overthrow.” These include situations where “military law was declared, a state of siege, the suspension of the constitution, a vote of no confidence by a parliamentary majority, or a call for impeachment of top officials” Banks, see n. 19.

²⁴ Ghosn, “Domestic Unrest and the Initiation of Negotiations,” see n. 20.

itself might be related to the outcome variable. By using non-security related or even foreign policy measures for the independent variable, I avoid the risk of an unintended relationship between the IV and DV.

3.4.2 Other determinants of treaty design

The model developed in Chapter 2 incorporates several factors likely to influence information exchange provisions in an agreement, namely: costs of monitoring, benefits of cooperation, benefits of cheating, and costs of the status quo. In reality, these costs and benefits might come from a variety of sources. Additionally, while they were not directly incorporated in the model, based on existing knowledge of conflict and cooperation dynamics we might expect several other variables to play a role including the balance of power, territorial proximity, and nuclear technology. These factors may indeed contribute to the likelihood of treaty outcomes, but as I argue and show in the next section, domestic political volatility has a separate effect even when these more commonly accepted explanations are taken into account.

The most likely additional determinants are outlined here, and Appendix I provides more details on the logic of each of the control variables as a possible determinant of treaty design, as well as information on how they were measured for the analysis. The core controls include: balance of power, territorial contiguity, recent military conflict, recent treaty, arms races, resource wealth, and nuclear weapons capabilities.

Balance of power - The balance of power (in terms of material capabilities) might have effects in both directions because it could be a factor in both the benefits of cooperation and the costs of maintaining status quo. Equally balanced states may be more willing to sign treaties in the first place, as in those cases limitations are more likely to be even. Many arms control scholars have argued that arms control agreements are more likely to emerge when

military capabilities are evenly balanced.²⁵ Equally matched dyads may have more to gain from cooperation; without it, both sides could pursue arms racing and expend resources on the build up. However, some treaties are imposed rather than signed completely voluntarily, so highly uneven dyads might be those where a powerful state is more likely to impose its preferred treaty solution on a weaker adversary. Here, asymmetric dyads may face higher cost to maintaining the status quo, such as an ongoing conflict without a surrender.

Wealth and other advanced capabilities - Countries may have different baseline capabilities to observe their adversaries and different levels of resources to finance monitoring measures. These factors are likely to affect the cost of monitoring. I use a wealth measure to capture differences in technology or resources that might be available to states - the wealthier states are, the lower their cost of monitoring should be. It may also be the case that wealthier states can afford to maintain arms races for longer than poorer states and might therefore have different incentives for pursuing arms control treaties, or may prefer a different kind of arms control treaty than a poor counterpart.

Certain technologies in particular may also alter the costs of monitoring or implications of cheating in a qualitatively different way from other capabilities. Nuclear weapons likely alter the cooperation calculus in numerous ways. An advantage gained through cheating on a nuclear-related agreement could be devastating to the opponent. At the same time, incentives to limit some “destabilizing” nuclear capabilities and lower the possibility of nuclear Armageddon would be very high.²⁶

²⁵Thomas Risse-Kappen, “Did Peace Through Strength End the Cold War? Lessons from INF,” *International Security* (1991): 162–188; Steven E. Miller, “Politics over Promise: Domestic Impediments to Arms Control,” *International Security* 8, no. 4 (Spring 1984): 67–90.

²⁶For example, destabilizing systems would be those that create incentives for a nuclear first strike.

3.4.3 Data structure

The dependent variable for the analysis is either a treaty being signed (Hypothesis 3) or a categorical measure of information exchange provisions (Hypotheses 1 and 2). Importantly, states can also choose simply to have no formal cooperation and not sign a treaty. The data structure and the empirical analysis I employ characterizes the choice states face as being between no treaty, a treaty with low information exchange provisions, or a treaty with high information exchange provisions. The data generating process this suggests is in contrast to a situation where states first decide to pursue a treaty, and then conditional on having agreed to cooperate, decide what kind of provisions it will have.²⁷ The quantitative approach here instead compares all categories as equal choices. In doing so, it best mirrors both the formal model introduced in chapter 2, and the real world experience. As discussed in the case study of the Intermediate Nuclear Forces Treaty in chapter 4, states may very well prefer a high monitoring treaty as the top choice, no treaty after that, and see a low monitoring as the worst outcome. In negotiations, not being able to agree to a certain form of treaty could very well lead to states failing to sign an treaty at all.

Each pair of states is observed on a yearly basis, and at each point there is an outcome of a type of treaty signed or no treaty signed. The data set captures the year that treaties were signed rather than the year they were ratified for three reasons. First, ratification is often delayed for other, non-security or strategic reasons such as electoral politics in a given state, and time until ratification is often a separate question from why states chose to make a certain type of commitment in the first place. Second, in many cases, states informally comply with a treaty that was signed but not ratified. The executive branch which designed the treaty usually also has control of security-related decisions, and so often does not need the ratification step to carry out treaty commitments. There are also several examples of

²⁷This story would be better modeled by a different kind of statistical model, such as a conditional or nested logit.

cases in which states were held accountable by their adversaries for treaty compliance or violation even for ratified agreements.²⁸ Finally, states commit to cooperation agreements with at least some expectation that they will be ratified and put in place, so the signing of a treaty is not a cost-less move that does not imply a commitment. While ratification is a stronger commitment step, it can be more removed from the motivations of treaty design and measuring signature better identifies the moment and conditions under which states were willing to accept a certain treaty form.

The ideal way to characterize the negative cases of “no treaty signed” would be instances where states considered an arms control treaty, but either did not pursue it or were unable to come to an agreement. The case studies which follow this chapter take exactly this approach. However, in a large-n context, identifying every possible negotiation is very challenging even if such historical data were readily available. Instead, my analysis starts with the assumption that any pair of states could possibly conclude an arms control agreement, regardless of whether we know whether they tried or not. In practice, this means I use all dyad years as observations.²⁹

I do not narrow the analysis to politically “relevant dyads” for theoretical reasons specific to the nature of arms control treaties. The idea of politically relevant dyads is that

²⁸For example, the US and USSR followed the Threshold Test Ban Treaty and Peaceful Nuclear Explosions Treaty for almost 15 years before they were ratified. Thomas Graham, *Disarmament Sketches: Three Decades of Arms Control and International Law* (Seattle: Institute for Global and Regional Security Studies : University of Washington Press, 2002), 62. The SALT II agreement between the US and USSR was never ratified but both sides abided by the treaty terms for a number of years. The fact that neither ratified did not stop them from claiming that the other was violating, and from using the violation as a way to justify its own reciprocal arms build up. The US today complies with the Comprehensive Test Ban Treaty, though it has not ratified it, and while ratification would send a different kind of public message about US support for the treaty, the form of the commitment has already be set, and the international monitoring tools called for in the treaty provisions have also largely been put in place, with US support.

²⁹Following past studies, this analysis uses nondirected dyads generated using the EUGene software, which combines data from the COW project, Polity IV project, and several other common sources. Several of the other control variables either directly output by the program (contiguity, energy expenditure) or derived through manipulations of provided variables (moving average of arms build up, joint democracy, etc.) D. Scott Bennett and Allan C. Stam, *EUGene*, 3.1 (2005).

some pairs of states have a greater opportunity for conflict, and therefore only dyads that are likely to be involved in conflict should be compared to one another. However, this view is problematic for arms control and in fact about 20 percent of observed treaty dyads are observed in non-politically relevant dyads. Arms control can happen when states face clear threats and opportunities for conflict, but it can also happen in anticipation of future threats and capabilities they do not yet possess. This anticipation makes states with little current interaction possibly threats in the future, and therefore possible targets for arms limitation efforts. For example, as soon as nuclear weapons were invented, almost any state could possibly acquire or plan to acquire them— if not in the 1960s, then certainly today. This makes any state a potential cooperation partner for an agreement to limit nuclear weapons technology, and in fact we see numerous non-nuclear weapons states playing an active role in the nonproliferation regime.

Some agreements seek to limit technologies or behaviors that could have a global impact. Limits on the spread of missile technology is a good example. It is plausible that a country in South America would be interested in limiting the capabilities of countries in the Middle East (a combination would in most cases not be politically relevant dyads) because acquiring such technology could allow even distant countries to threaten interests, create new pressures, or go on to transfer capabilities to more immediate adversaries.

A number of other ways to limit the comparison set are likewise unsatisfactory. Narrowing the cases to known adversarial pairs is difficult across all cases over time. Research on enduring rivalries has sought to better characterize particularly adversarial pairs, with mixed success. A history of recent conflict is also an insufficient identifier of adversarial dyads — the US and USSR did not have much direct confrontation during the Cold War but were of course adversaries. Eliminating dyads with a shared alliance assumes too strict and too constant of a distinction between allies and adversaries.³⁰ States policies shift positions over

³⁰Studies of war initiation do not cut dyads which are in a formal alliance, as outbreak of war is still possible

time, so there may be reasons to restrain future aggression of current allies.³¹ Second, some alliances may be temporarily directed against a common threat. Such temporary friends might still be competitive against one another in another area, so an arms control treaty occurring between them is possible. Finally, some alliances remain recorded as active in existing data sets even while both states have since become adversarial.

From a methodological point of view, if a dyad has a very small probability of signing a treaty, it is still better to include the observation and model that low probability using covariates. Dropping observations, as would be the case with politically relevant dyads, places a strong assumption that the dyad could never cooperate. For adversarial treaties only one modest method of limiting the observations stands up to the high bar of a “zero probability” of a treaty assumption. Unlike other alliance agreements, members of NATO and the Warsaw Pact were sharing capabilities and had a very high degree of coordination in their war planning. These alliances were also highly durable, constantly maintained and considered by all members as long term security solutions rather than temporary ways to balance a common enemy. Dyads between members are essentially are not able to create arms control agreements between themselves because in many ways their military capabilities and behaviors as well as security goals are shared; a limitation or restraint would be more akin to a unilateral decision rather than a negotiated bargain between sides with opposing security interests.

Further, while I do not create treaty observation dyads between states which were on the same “side” as stated in the treaty text, some dyads between between NATO countries are still created because during the Cold War, the “sides” were often not stated in treaty preambles but still understood by all participants. Thus an observation of a treaty between

between partners, and in fact alliance abrogation is a topic of several important studies.

³¹Charles L Glaser, “Realists as optimists: Cooperation as self-helpelp,” *International Security* 19, no. 3 (1994): 50–90 notes that, “because today’s ally could be an adversary in the future, the line between allies and adversaries is not always sharp.”

two NATO or Warsaw states is most likely not an attempt to limit one another as adversaries, and it is much more likely that the agreement was negotiated alongside the dyad partner. I drop all treaty dyads which include two members of NATO or the Warsaw pact. The majority of dropped treaty dyads are US-UK. For example, a treaty with US, UK, and Russia as members is observed with a US-Russia dyad and a UK-Russia dyad, but not UK-US. This result is of course consistent with the historical record – even where UK concerns occasionally differed from the US, the two states were largely negotiating on the same side to limit Soviet capabilities, not to limit one another.

Finally, it is important to note that the data structure used by COW has one observation per dyad year. However, there are several cases where two states sign multiple arms control treaties in the same year. Unfortunately there is no way to account for these repeated events within the dyad-year research design. Therefore, in cases of multiple treaties in one year, I use the observation with the highest degree of information exchange. While imperfect, this approach attains the goal of capturing the most intrusive institutional provision states were able to agree to at given time.³²

3.4.4 Cross tabulation evidence

As the first step in analyzing the data, it is useful to look at simple cross tabulations of treaty types and possible determinants. These results provide a first stage of support for the hypotheses, and give indications for how different variables should play a role in more sophisticated statistical analysis. Most importantly, these results cover a wider range of the treaty data than is possible with multivariate regression. This is because observations that are missing data on some of the variables are dropped from multivariate analysis entirely, while in a basic cross tabulation table we are still able to learn about about bi-variate

³²This approach also mirrors the decision rule often used for multiple militarized disputes in one year, where the most intense MID is taken as the yearly observation.

relationships where data on the variable is available.

Table 3.3 shows the percent of dyads which experience the two kinds of domestic volatility – cabinet or executive changes for top-down volatility and demonstrations riots or strikes for bottom-up volatility. In non treaty dyads, domestic volatility is still relatively frequent, with top down shifts occurring in 34% of the cases observed, and bottom up pressures in 25% of the cases. This clearly shows that of course domestic volatility does not always lead states to pursue international cooperation in foreign policy. However, in looking at the treaty dyads for both types of treaties, the data shows that these cases are those which also experience domestic volatility at a considerably higher level than the non-treaty population. Out of all high monitoring treaty dyads where we also have data on domestic conditions, 42% had a cabinet or executive change in one or both states in the prior year, while 55% have experienced public unrest.³³ The difference between high monitoring and low monitoring treaties is not immediately clear, and the percent of volatile dyads is higher for both treaty types by approximately the same range.

The table also shows that big percent of treaty dyads do occur under stable conditions – slightly more than half are stable along the top down volatility measure, and less than half are stable along the bottom up public unrest measure. This suggests that while volatility may be associated with a higher likelihood of treaty cooperation, is also not necessarily the only driver in all cases, and plenty of treaties are still signed under stable conditions. Finally, it is clear that treaties are relatively rare events between states, and the vast majority of dyads have no treaty signed. This is as expected, since treaties are somewhat more frequent than wars, and less frequent than militarized disputes, which include lower levels of aggression.

Table 3.4 shows the same comparison of treaty dyads vs. non-treaty dyads but along other possible determinants of treaties. Among treaty observations, joint democracies are

³³The measures are not mutually exclusive, and some dyads could have both types of volatility. Dyads are measured as volatile vs. stable along top down or bottom up measures separately.

Table 3.3: Percent of Observed Dyads by Treaty Type [Volatility]

Dyad Types		High Info Treaty	Low Info Treaty	No Treaty
Domestic Volatility	Cabinet or executive change	42%	45%	34%
	stable	58%	55%	66%
	total number of dyads	1204	1363	716,555
	Demonstrations, riots or strikes	55%	56%	25%
	stable	45%	44%	75%
	total number of dyads	1103	1213	669,442

over represented compared to the incidence of democratic dyads in the population of non treaty cases. Conversely, a lower percentage of treaty dyads are observed with two autocracies than the percent of autocratic dyads among the non treaty observations. This could suggest a higher propensity among democracies to sign treaties with one another. This is somewhat puzzling, because we might expect democratic states to have fewer areas of security contention and a lower likelihood of conflict between each other. On the other hand, democracies could have an increased propensity for treaties because with more open information in general, information provisions between democratic pairs are less costly to implement. However, the higher percentage of democratic treaty dyads could also reflect higher participation in treaty regimes by more powerful western democracies. The states which are counted as participants in the highest number of treaties include Russia, US, UK, France, Italy, Japan, Germany, China, Canada, Brazil, and India. Even though NATO dyads were dropped, its still possible that democracies are over represented as in treaty dyads due to their relatively high power rather than their democratic characteristics. The percent of mixed democratic/autocratic dyads is about the same in all treaty outcome categories, and

autocratic only dyads are underrepresented among the treaty dyads.

Treaty dyads tend to have a somewhat higher level of power parity than non-treaty dyads, and again this is observed for both high and low monitoring dyads. A greater percent of the treaty dyads fall in the top 25 percentile range for high parity. This finding provides early support for the prediction that the power balance matters for the probability of arms control treaties, and that parity is associated with greater security cooperation. Also, as expected, treaty dyads are much more likely to have certain advanced technologies, including nuclear weapons and satellite capabilities. A number of treaties focus on restraints on nuclear weapons, so it makes sense that states which possess these capabilities are involved in agreements. For an earlier time frame it is possible that possession other threatening technologies – such as blue water navies – would be associated with higher treaty participation. Satellites allow states to have lower cost observation of adversaries, and thus possibly a higher willingness to accept mutual restraints. Both nuclear weapons and satellites are also likely associated with other advanced conventional weapons capabilities, which themselves could be the subject of a higher number of arms control treaties.

The analysis suggests that several other dyadic measures may be associated with a higher probability of adversarial treaties. Some of these are likewise not surprising – arms control treaties have a higher percent than non treaty observations of dyads with an arms race, in a rivalry, or having recently experienced an interstate dispute. All these factors are indicators that the two states may have some security over which they are competing, and a treaty is one possible answer to that competition. Pairs of states that do not have an immediate area of security competition would be less likely to seek institutional responses to manage competition.

Finally, two findings from the cross tabulation are somewhat more curious. First, although treaties are more likely between enduring rivalries, the percent of observations with treaties between rivalry states is still relatively low. This observation suggests that

Table 3.4: Percent of Observed Dyads by Treaty Type

	Dyad Types	High Info Treaty	Low Info Treaty	No Treaty
Polity	Democracies	39%	45%	20%
	Mixed	45%	38%	46%
	Autocracies	16%	16%	34%
		(100%)	(100%)	(100%)
Power .5=balanced 1=asymmetric	Average balance	0.74	0.74	0.84
	Dyads near parity (0.5-0.72) ^a	49%	44%	25%
Other key variables (nonexclusive conditions)	Rivalry	7%	8%	0.72%
	Arms Race	32%	36%	23%
	Militarized dispute ^b	17%	12%	0.1%
	Nuclear weapons ^c	10%	0.8%	0.1%
	Both w/ satellites ^d	36%	42%	1.2%
	High wealth dyad ^e	83%	86%	50%
	Treaty experience	8%	8%	7%
total number of dyads 1816-2010 ^f		1303	1493	793,981

^a0.72 is the 25 percentile for average balance of power scores

^bMilitarized interstate dispute in the last 5 years

^cNuclear Weapons: Percent of dyads since 1945 only.

^dSatellite: Percent of dyads since 1945 only.

^ePercent of dyads with total wealth above the 50th percentile. Wealth measured as $\ln(\text{sum of primary energy consumption in both states})$. The 50th percentile is 10.16. The alternate measure for wealth used in robustness checks for regressions later on is per capita gdp. This data is only available for post 1945. The pattern for gdp is very similar to the energy consumption measure: high monitoring treaty dyads: 78%, low monitoring treaty dyads 87% and no treaty dyads at 50%.

^fNote that the number of treaty dyads for each variable in the table is often less than the total number of treaty dyads due to missingness in individual variables. For example, due to missing data from 2004 onward, for Polity there are 1204 High Info Treaty dyads, 1363 Low Info Treaty dyads, and 716,555 no treaty dyads.

the rivalry measure may not be a good way of identifying likely treaty conditions, as the majority of adversarial treaties are being signed outside what scholars have identified as enduring rivalries. Second, there does not appear to be a difference between treaty dyads and non treaty dyads on the factor of prior cooperation experience, whereby both partner states have concluded treaties with different partners in the last 10 years.

3.5 Hypothesis 3: Effects of Domestic Political Volatility on Treaty Signature

I start with a test of Hypothesis 3 because it is a more general formulation of the theory expectations and also involves a less complex statistical approach. Hypothesis 3 predicts that both top-down and bottom-up domestic political volatility should make treaties more likely overall because former informal coordination between cooperator states is now more likely to be formalized into an agreement, and where highly competitive states were imperviously unable to come to agreement, arms control treaties are more likely to emerge. With treaties more likely essentially from both sides of the spectrum, we should observe an increase in their overall probability regardless of states' relationship with one another as cooperative or competitive types. This section presents the statistical approach for a binary outcome model and presents the results, which show strong support for Hypothesis 3 for both indicators of domestic political volatility.

3.5.1 Statistical Approach

The outcome variable is a binary outcome – whether or not a treaty is signed in a given year. I use a logistic regression to model the effect of explanatory variables. I run two separate models, one to test the effects of top down political volatility on treaty outcomes, and the

second one to test the effects of bottom-up volatility. The control variables are the same for both models, as are the robustness checks preformed. Both the full justification for the controls and the extra check are provided in the appendix.

Because of several likely dependencies in the data, I also use dyad clustered standard errors and controls for time. The clustered standard errors reflect the fact that we expect observations of the same country pairs over different years to not be completely independent from one another. We also expect that a yearly observation would not be independent from the years before it, so for this kind of panel data is it important to control for time. I use the method developed by Carter and Signorino (2010) and create a variable that measures the number of years since the last treaty, and also use the squared and cubed variants of that measure.³⁴ This process mirrors the time variables used by conflict scholars of years since last dispute but adapted for my new dependent variable. The models presented in Appendix II include both dependence measures, but the coefficients for the time variables are not reported – all were significant but with very low magnitude effects.

3.5.2 Results and Discussion

The results show strong support for Hypothesis 3, which posits that domestic political volatility leads to a higher probability of arms control treaties in general. When political volatility is present in the form of top down leadership change, treaties are about 47% more likely, controlling for other possible confounders. For bottom up volatility from social unrest, the effect is an increase of about 70% in the probability of observing an arms control treaty. The full results are reported in Appendix II. These results are significant with only slight variation in magnitude with other important robustness checks.

Figure 3.4 illustrates the results of the logistic regression analysis using odds ratios.

³⁴David B. Carter and Curtis S. Signorino, “Back to the Future: Modeling Time Dependence in Binary Data,” *Political Analysis* 18, no. 3 (2010): 271–292.

An odds ratio greater than 1 indicating an increase in the probability of observing a treaty when the explanatory variable is observed (for binary variables) or when it increases by one unit (for continuous variables). The figure shows the odds ratios for the coefficients for both volatility measures are significant and greater than 1, and significant at the 95% confidence level, as indicated by the line surrounding the point estimate not crossing 1. The other possible determinants also have significant effects on treaty outcomes, all in the direction that was expected for these variables. As the figure demonstrate, the magnitude of the effects of domestic volatility are about on par with some of the more intuitive reasons, such as recent conflict or an arms race, while the effects of a couple factors – contiguity and a treaty signed by the dyad in the last 5 years – appear to have stronger effects. These variables in particular are likely capturing conditions where states have a higher number of security challenges or issues of contestation between them, and so more opportunities to address their competition through agreements.

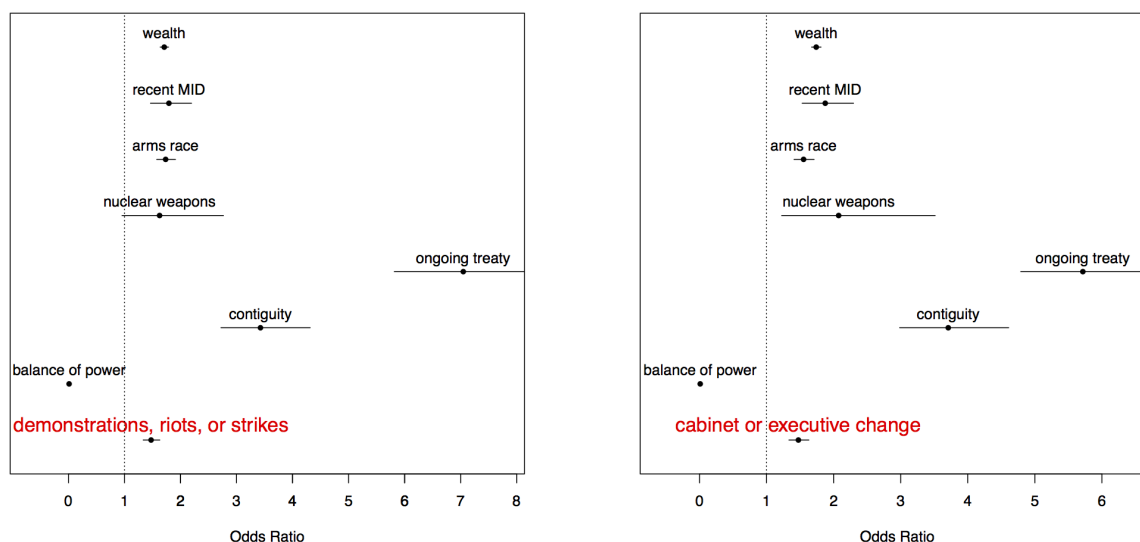


Figure 3.4: Effect Domestic Political Volatility Probability of a Treaty

3.6 Hypotheses 1 and 2: Effects of Domestic Political Volatility on Information Provisions in Treaty Forms

While the prior two sections give strong support for the effect of domestic volatility on arms control treaties in general, the core of the theory in Chapter 2 focused on the goal of differentiating the conditions under which we would expect to see different forms of agreements emerge. To study the determinants of different treaty forms, statistical approaches for multiple outcomes are more appropriate than the binary outcome model used in the previous section. Here, the data on treaty provisions allows us to divide treaties into different outcome groups – low and high monitoring – and test for the expected effects on the probabilities of either of these outcomes in comparison to no treaty signed.

This section discusses the statistical approach for testing multiple treaty type outcomes, and focuses in particular on the conditional nature of Hypotheses 1 and 2. The idea behind those predictions is that each treaty type is more likely when domestic political volatility occurs under each of the baseline conditions of beliefs about the adversary, which can be either expectations of cooperative behavior or expectations of competition and cheating. The results presented in this section show strong support for high monitoring treaties being more likely to emerge under baseline conditions of highly competitive beliefs combined with domestic political volatility. In contrast, low monitoring treaties are more likely when the same domestic volatility events occur in cases of states with more cooperative beliefs and underlying expectations of compliance. In both cases, volatility is associated with a significant increase in the probability of treaties, at about 50% for low monitoring and 200% for high monitoring. Alternative explanations – including effects from advanced technology and experience in treaty design – are also tested, but while there is of course evidence that

other factors also affect treaty forms, the domestic political volatility factors are shown to consistently have an independent significant effect.

3.6.1 Statistical Approach

Given the categorical and ordered nature of the treaty provision data, the best suited model is a generalized ordered logit model, which has key advantages over the more familiar ordered and multinational model specifications. Ordered logit models are often used with outcome categories that are increasing or decreasing along some dimension, such as the degree of intrusiveness or amount of information collected in the case of treaty provisions. However, such models impose a proportional odds assumption, meaning that the effect of a variable on the probability of outcome category 1 is constrained to be proportional to the effect of that variable on the probability of outcome category 2, etc. This assumption may not necessarily hold in the case of treaty design. For example, it is reasonable to expect that the balance of military power might have a different effect on high monitoring treaties rather than low monitoring treaties. Most importantly, the predictions of Hypotheses 1 and 2 explicitly focus on the explanatory variables having different effects on the two treaty types, so constraining the slopes of effects to be proportional (as would be the case with the proportional odds assumption) would make it difficult to test the hypotheses.

The generalized ordered logistic model allows the researcher to fit either an unconstrained version of the ordered logit, or a partial proportional odds model, which imposes the parallel line assumption on some variables while allowing other coefficients to vary across categories.³⁵ For this analysis, the generalized ordered logit allows me to use the ordering

³⁵The mode and its application in Stata are detailed in Richard Williams, “Generalized ordered logit/partial proportional odds models for ordinal dependent variables,” *The Stata Journal* 6, no. 1 (2006): 58–82. See also James W. Hardin and Joseph M. Hilbe, *Generalized Linear Models and Extensions*, Second (College Station, TX: Stata Press, 2007) for a technical discussion. Although generalized ordered logits are not very widely used in political science (see for Regina P Branton and Bradford S Jones, “Reexamining racial attitudes: The conditional relationship between diversity and socioeconomic environment,” *American*

information of the dependent variable, while making few assumptions about the effects of independent variables and controls. However, the generalized ordered logit model is more difficult to interpret, and its non-parallel lines allow for the counter-intuitive possibility of negative predicted probabilities for some data, especially when the model is fairly complex. The model is therefore limited in specifications with numerous controls, and generates non-sensical predicted probabilities at some ranges of the independent variables. For this reason, I report results for both the multinomial logit and generalized ordered logit for most models. Importantly, this demonstrates that the results are not model specific and are consistent in direction, significance level and rough magnitude of substantive effects.

The multinomial logit is also well suited for studying categorical variables, but it is somewhat less appealing because it cannot incorporate the ordering information for the dependent variable – the information that a high monitoring treaty is more intrusive than a low monitoring one is not used. The model allows all coefficients for all variables to vary across categories. Therefore, a multinomial logit is the least restrictive approach, and results which are significant from the mlogit are usually even stronger when the analysis is redone using models that impose restrictions, such as proportional effects or ordering of outcomes.

Beliefs about the Adversary

The most important feature of Hypotheses 1 and 2 is that the effect of volatility is expected to be conditional on beliefs about the adversary. The theory posits that the effect of the uncertainty generated by domestic political volatility depends on whether states believe they are interacting with an adversary with low incentives to cheat or high incentives to cheat. To capture the prior belief about the other state, I look at state's general foreign policy positions. I use the new measure of policy ideal point estimates, which calculates each state's

Journal of Political Science 49, no. 2 (2005): 359–372 example), they appear more commonly in sociology, health and education journals.

position relative to the pattern of other votes at the UN general assembly.³⁶ The measure is an improvement on prior efforts which similarly uses UN voting patterns to capture the nature of states' positions relative to one another. The Affinity of Nations measure of policy similarity used UN voting patterns to calculate the maximum metric distance between two states.³⁷ The new version instead employs a roll call methodology approach to calculate a policy ideal point estimate for each state. I then determine the degree of similarity or difference between each pair of states by calculating the distance between the ideal points to determine policy proximity.

States with very dissimilar foreign policies – and thus a high policy distance on the UN vote measure – are likely to believe that they have high incentives to cheat on cooperation and be engaged in a prisoner's dilemma dynamic. These types of states are more likely to see their long term security goals in different ways, and see one another as constantly seeking to secure its own security goal. In contrast, states with similar foreign policies are those that believe their partners see cooperation incentives and disincentives in similar ways. If there is a security cooperation situation then these states are likely to have low incentives to cheat and would be playing a coordination game.³⁸ While the distance in UN ideal point estimates is the best available proxy for capturing states' beliefs about one another's incentives, it only

³⁶Michael Bailey, Anton Strezhnev, and Erik Voeten, "Estimating Dynamic State Preferences from United Nations Voting Data" (Sept. 2013).

³⁷Anton Strezhnev and Erik Voeten, "United Nations General Assembly Voting Data" (Aug. 2012). The metric distance calculation uses a method developed by: Curtis S. Signorino and Jeffrey M. Ritter, "Tau-b or Not Tau-b: Measuring the Similarity of Foreign Policy Positions," *International Studies Quarterly* 43, no. 1 (Mar. 1999): 115–144.

³⁸The distinctions between the beliefs and which game different types of players are engaged in is detailed in Chapter 2. Note that the operationalization of beliefs using policy similarity assumes that the two states in a dyad hold the same belief about one another. This is of course a simplification, but it is one which is consistent with a simplification in the formal model developed in Chapter 2, where states have the same belief, α about one another's incentives. While in the real world some differences in beliefs by two states about one another are surely possible, the differences that do exist are also likely to be relatively marginal. It is difficult to come up with an example where one state clearly saw the the adversary as a likely competitor in the arms control context, while the other, all the while being treated with high suspicion, still saw its adversary as being a likely cooperator with low incentives to cheat on an agreement.

measures states that are members of the UN which narrows the statistical analysis to the post 1945 period.

To test the effect of domestic political volatility conditional on the beliefs about a likely cooperative or likely competitive adversaries, I create an interaction term of policy ideal point distance multiplied by the volatility measure. For the binary volatility measures, this means the interaction term will have a positive value when volatility exists, and will be zero otherwise. In the results of the regression analysis, a positive coefficient on the interaction term means that as the policy distance between states increases (towards states that believe one another to have high incentives to cheat), the effect of political volatility on the treaty outcome increases as well. If interaction terms are significant, this indicates support for the claim that the effect of the main explanatory variable is in fact conditional on the levels of the second variable. However, as discussed in the next section, interpreting raw coefficients for discrete choice models is difficult, particularly with interaction terms, so for the most part the discussion will focus on presenting the substantive effects rather than the coefficients themselves.

Other modeling specifics

To take into account the temporal sequence of baseline beliefs, changes in domestic conditions, and treaty outcomes, I used lagged versions of the explanatory variables. The two measures of domestic political volatility are binary variables and are all lagged by one year. “Demonstrations, riots or strikes” and “cabinet or executive change” are coded 1 when the event occurred in the prior year. This accounts for any lag between a change in certainty about the adversary, a renewal of treaty negotiations, and a subsequent signing of an agreement. Even if an agreement becomes highly likely, and both sides agree on terms, it often takes some time to negotiate and prepare the details of treaty text. The measure for prior beliefs about the adversary – the distance in their policy positions based on UN voting pat-

terns – is lagged by two years to ensure that it captures the beliefs that existed prior to the occurrence of domestic political volatility and not any shifts in policy positions that might be coming about as a result of the volatility. While the policy distance measure would not be expected to move so quickly in response to all domestic shifts in any case, the lag further ensures that it captures the baseline conditions between the two states.

The base model uses the same set of control variables as were applied in the previous section for testing Hypothesis 3: contiguity, balance of power, recent treaty, recent militarized dispute, wealth, and nuclear weapons. Several additional variables were tested as possible alternative explanations and robustness checks – including satellite technology, and treaty experience with other states. As with the previous models, I use dyad clustered standard errors and controls for temporal dependence. For the generalized logit models, the time controls were not used in the results reported, but the outcome is nearly identical when they are included. As noted, fully unrestricted generalized logit models can perform poorly in highly complex models with many covariates, so excluding the time controls served to decrease computation time and minimize errors from negatively predicted probabilities without changing the results.

3.6.2 Results and Discussion

Using regression analysis, I find support for Hypotheses 1 and 2, showing that high and low monitoring treaties are more likely to occur following domestic political volatility, but differently depending on states' baseline beliefs about the adversary. For states that see one another as competitor types with high incentives to cheat on cooperation, an increase in uncertainty following domestic political volatility is associated with a increased probability of high monitoring treaties. However, volatility does not have the same effect on treaty outcomes for states that see one another as cooperator types with low incentives to cheat. For those cooperator type states, domestic volatility is associated with a somewhat higher

probability of low monitoring treaties. The interaction term between volatility and policy position is significant in nearly all the models estimated (including robustness checks), and is consistent in direction across all measures. This gives strong support for the conditional nature of the effect of volatility on agreement type. The figures presented in this section elaborate on these findings, and the full statistical results are provided in Appendix II.

The results below focus on the effects of the key volatility variables rather than on any of the controls. However, it is worth noting that for most of the controls the statistical results strongly support the intuitive expectations, which provides additional validity for the models. For example, as we would expect from historical and observational experience, the results shows that when both states have nuclear weapons they are more likely to sign high monitoring treaties. Likewise, contiguity is associated with a higher probability of both kinds of treaties. Most of the control variables have a significant effect on treaty provisions in directions that are consistent from what might be expected given the cross tabulation results in the last section.

Since the raw coefficients of models with interactions are difficult to interpret, it is useful to assess the effects of the independent variables by looking at the probability of a treaty type when the volatility is present vs. when conditions are stable. I use Clarify to generate simulations based on the regression results and assess the average effects of the volatility variables switching from 0 to 1 at different levels of policy distance in each dyad.³⁹ The other control variables are held constant at their median values. Figures 3.6 and 3.5 presents the generalized ordered logit results for each of the variables.⁴⁰

For both figures 3.6 and 3.5, we can look first at the panel on the right side of the

³⁹Michael Tomz, Jason Wittenberg, and Gary King, *Clarify: Software for Interpreting and Presenting Statistical Results*, 2.1 (2003).

⁴⁰I altered the Clarify package for Stata to be able to use the fully unrestricted generalized ordered model. However, more significant alterations would be needed in Clarify for a semi-parametric version of the model, where some variables are constrained to the same slope across categories.

figure, which shows the effects on high monitoring treaties. When the policy distance is high, between for example 2 and 4, there is a gap between the stable condition and the volatility condition where confidence intervals do not overlap.⁴¹ In this range, the presence of domestic political volatility in the last year makes high monitoring treaties significantly more likely as compared to when such events do not occur, with all other factors held constant. However this effect decreases for states that have closer policy positions, and for the most cooperative types of states, at policy distance from 0 to 1, there is no difference in the probability of a high monitoring treaty when comparing the stable and volatile conditions. This finding provides support for Hypothesis 3 on the likelihood of high monitoring treaties between highly competitive dyads.

The left hand panel of both figures shows the effect on low monitoring treaties. The effect of political volatility is smaller than for the high monitoring cases, but still significant for a portion of the policy distance values. Importantly, as predicted by Hypothesis 2, domestic political volatility has a positive effect on the probability of low monitoring treaties for states that see one another as cooperative and likely to comply with agreements, indicated in the figure as those at the low end of the policy distance measure. For states at the other end of the spectrum, with high policy distance, political volatility does not contribute to an increase in the probability of a low monitoring treaty. This effect on low monitoring treaties is somewhat stronger for the demonstrations, riots or strikes variable than for the top-down change indicator, and this pattern largely holds throughout other specifications of these two models. Through inconclusive without further testing, this result suggests that for cooperative states, domestic political pressure may be a stronger indicator of a possible foreign policy change towards less cooperation, while top down leadership shifts are more likely to continue past policies and continue implicit or informal security cooperation

⁴¹For better visualization of the results, the figures show 90% confidence intervals. At the 95% the confidence intervals overlap at a slightly higher policy distance, but the difference is small.

commitments.

As was clear in the cross tabulation table in the previous sections, treaties are in general relatively rare in the full population of interstate dyads. The probability along the Y axis of figures 3.5 and 3.6 are unsurprisingly very small. To better understand the magnitude of the effect of the domestic political volatility variables, I compare the probability of a treaty under stable conditions at each level of policy distance with the probability of a treaty following recent volatility and calculate the percent change in that probability. Figure 3.7 shows the percent for both high and low monitoring treaties.⁴² For high monitoring treaties, in the range where domestic political volatility has a significant effect (between highly competitive states, high policy distance region) top-down political volatility has an effect of about a 200% increase in the probability of a high monitoring treaty. The magnitude of this effect decreases as beliefs become cooperative states, and eventually goes down to zero, which of course matches the lack of effect we saw for this region in the prior figures. For low monitoring treaties, the percent change is lower, and volatility is associated with about a 70% increase in the probability of low monitoring treaties. For the highly competitive states, the estimate is no longer significant and we cannot rule out that there is in fact zero effect at that level of beliefs. Although the overall probabilities of treaties is small, when comparing between the small probabilities of rare events it becomes clear the magnitude of the effect we observe is actually quite substantial.

The results of the generalized ordered logit (presented in the plots) are consistent with the multinomial logit in the magnitude, significance levels and direction of the estimated effects for both volatility measures. Again, the interaction between volatility measures and policy distance is significant in all models, and all of the control variables have very similar results. The regression results for the same models estimated with a multinational logic

⁴²Figure 3.7 shows the results just for the Cabinet and Executive change variable as the plots for the other volatility measure are almost exactly the same.

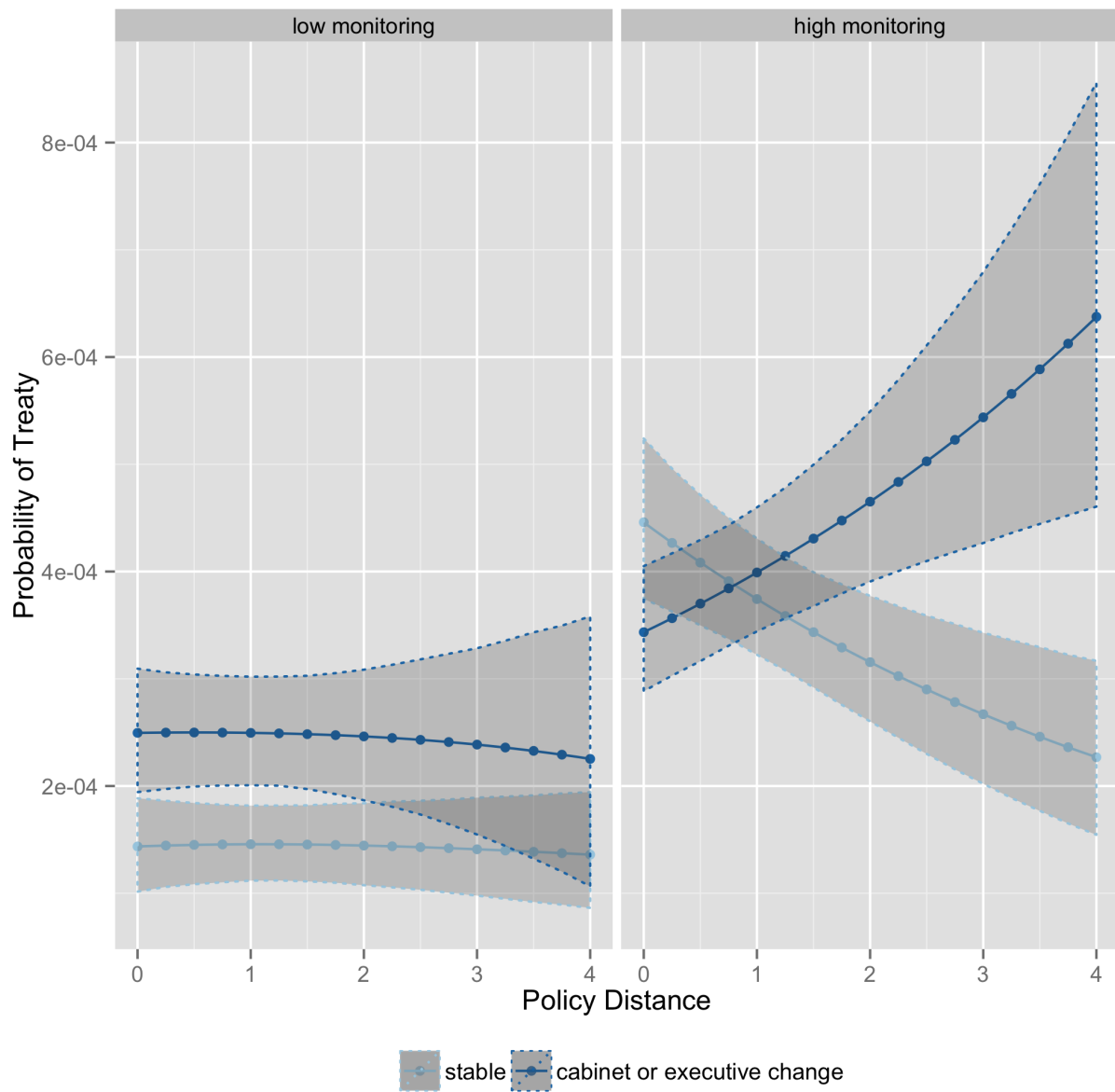


Figure 3.5: Effects of Cabinet or Executive Change on Treaties (Gen. Ordered Logit)

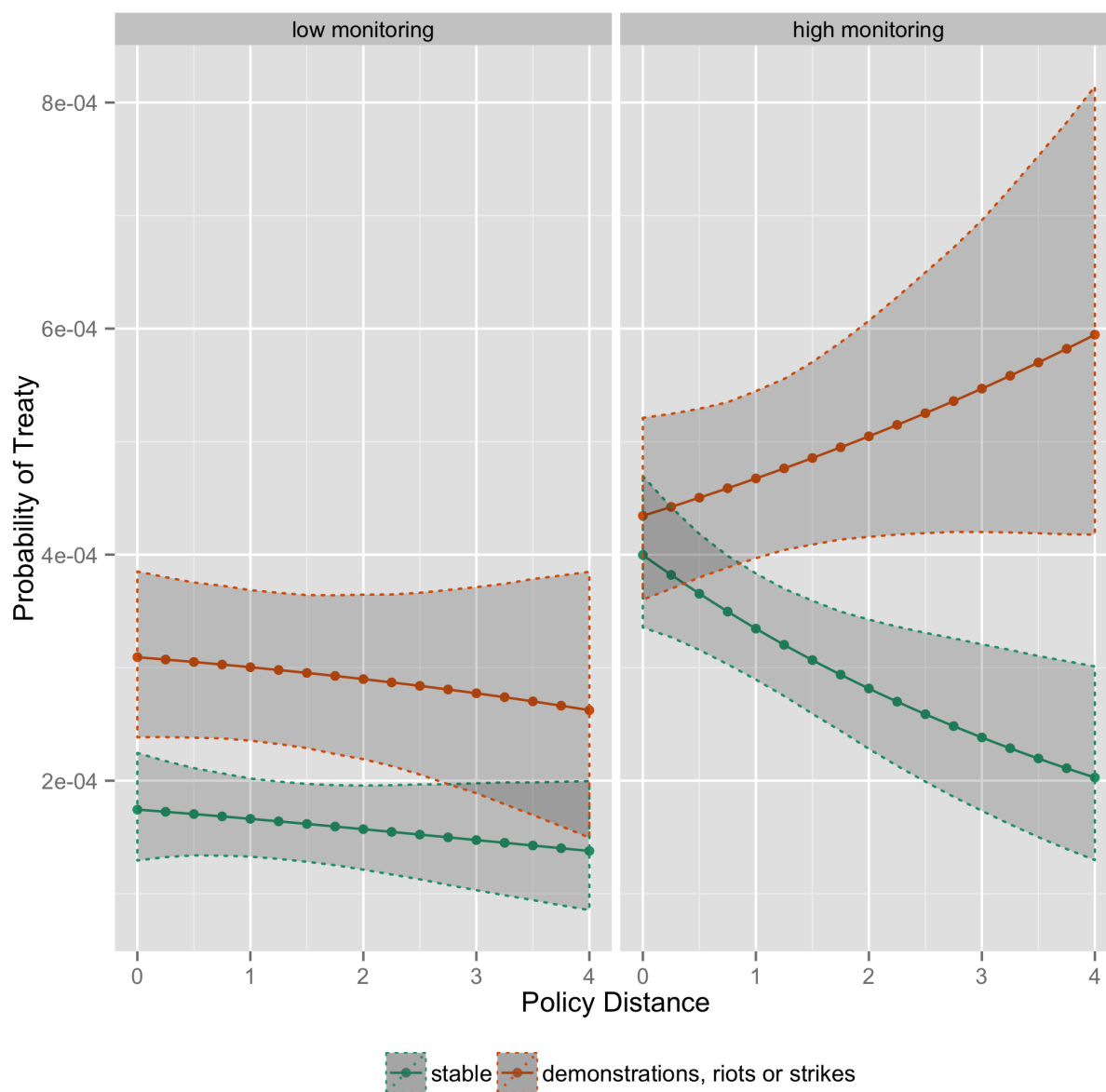


Figure 3.6: Effects of Demonstrations, Riots and Strikes on Treaties (Gen. Ordered Logit)

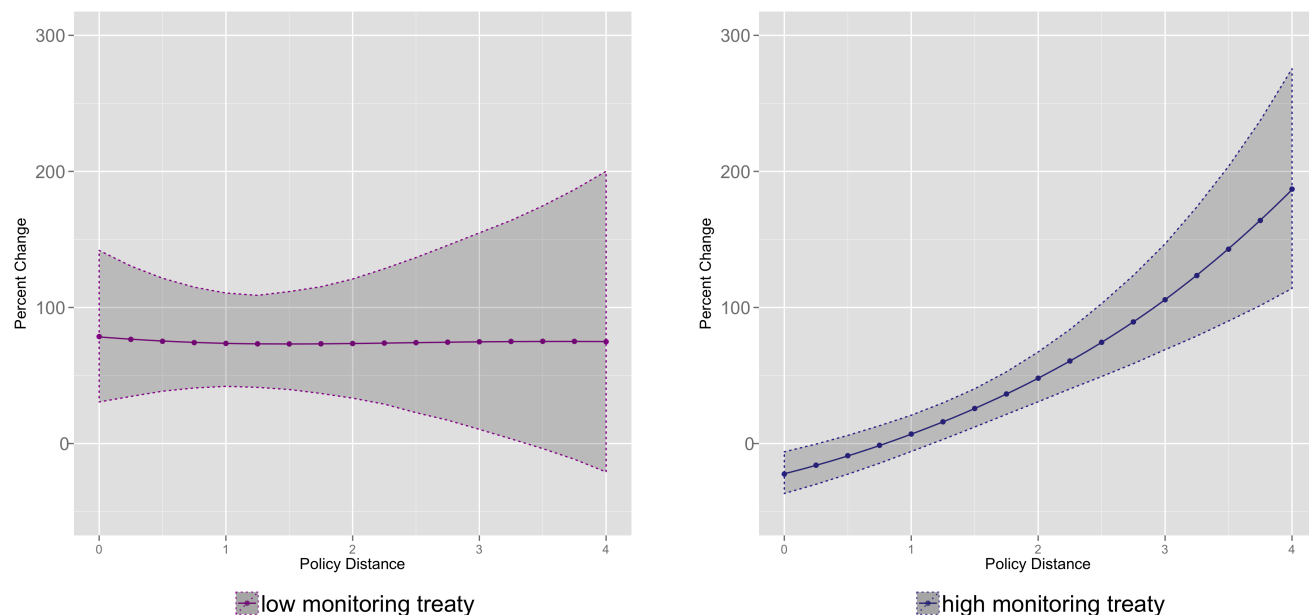


Figure 3.7: Percent Change in the Probability of a Treaty with Cabinet or Executive Change vs Stable Conditions (Gen. Ordered Logit)

instead of the generalized ordered logit are presented in the Appendix. In addition, the appendix includes figures showing the marginal effect of volatility for the multinomial logit versions. Those figures are almost exactly the same as figures 3.5 and 3.6 presented here. That the findings hold in the multinomial logit as well, and with all robustness checks performed for the multinomial logit, gives further indication that the finding is not based on a modeling assumption about the treaty types as ordered categories.

The theory developed in Chapter 2 argues that domestic political volatility plays a role because it creates greater uncertainty in beliefs about the adversary. This uncertainty itself is difficult to capture using a statistical approach. However, the finding that the effects of both volatility measures on low and high monitoring treaties is very similar across all models does give some support for the idea that such events have an impact on international for the same reason. Although both of the measures used are intended to capture the kind domestic political volatility what is likely create greater uncertainty, they are capturing different types

of volatility. The volatility measures – cabinet or executive changes and demonstrations riots or strikes– are not closely correlated with one another (.07). The specific role of domestic political shifts in increasing uncertainty in beliefs about the adversary is explored in greater detail in the next chapter, focusing on a case study of an individual treaty.

3.6.3 Alternative Explanations and Robustness Checks

The results presented in this chapter are robust to several alternate specifications of the model and variables used. In most cases, the control variables which would expect to provide some explanatory power for the probability of different treaty types do have significant results in the analysis. However, including or excluding various control variables does not significantly change the magnitude or direction of the effects from main explanatory variables. A few of these alternative models are worth noting, and again full results are provided in Appendix II.

First, I test the alternative view that states are more likely to pursue intrusive information exchange provisions after they have had have opportunities to learn how treaty tools work. As discussed in chapter 2, this prediction is based on a socialization theory, whereby we would expect states to adopt behaviors they see as appropriate according to international norms or standards. However, it is important to separate the kind of socialization that might be gained from experience in other arms control institutions from learning that might occur about the incentives of a particularly adversary. I therefore focus the effects of experience gained from interactions with other states on the likelihood of different provision types in given dyad observation.

I create a treaty experience variable which is coded 1 if both states in the dyad have participated in a treaty with another partner in the last 10 years, and 0 otherwise. The time frame is quite permissive, allowing a considerable period to pass before any learning is expected to be reapplied. I also do not differentiate between low and high past treaty

experience, as learning from both experiences could contribute to treaty participation in the future. However, the result show that there is no positive effect from prior treaty experience on the probability of signing either high or low monitoring treaties. In some of the models where there is a significant effect, it is actually in the opposite direction, suggesting that treaty experience with other states makes states less likely to sign treaties with the currently observed “new” partner.⁴³

The finding that learning from other treaty experiences does has no effect on the probability of new treaties does not necessarily extend to learning from experience from repeated interaction with the same cooperation partner. In fact, the results do show that having a treaty within the same dyad either in the last 5 years or 10 years has a significant positive effect on the probability of a current treaty. However, it is difficult to attribute this effect to learning about treaties or treaty provision mechanisms themselves. Rather, prior inter-dyad treaty experience could be 1) an indicator of better information about the adversaries incentives for cooperation (following for example a track record of compliance) or 2) an indicator that the dyad repeatedly experiences new security challenges that can be addressed with institutional tools.⁴⁴

The most substantively relevant robustness test is a check for the effects of satellite technology. Many modern arms control treaties rely on satellite technology to verify compliance, either implicitly or explicitly through the mention of “national technical means” in

⁴³Though not presented in the Appendix, I also ran these tests with only one of the the states in the dyads having treaty experiences. The results are similar; depending on model specifications, effects are either not significant or significant but in the opposite of the expected direction. Finally, I tested the treaty experience variable on its own along side the standard controls while omitting the volatility and beliefs variables. In these tests for both the multinomial logit and the generalized ordered logit specification the variable is not significant, meaning that the treaty experience with other states outside the dyad did have an effect on the likelihood of treaties with the current dyad partner.

⁴⁴On the latter point, the prior treaty experience could be a reflection of situations that other variables such as contiguity capture as well, where have certain recurring areas of contention, such as disputed borders, which repeatedly raise the stakes of maintaining the status quo and motivate states to seek some kind of solution to mitigate that heightened competition.

treaty information exchange provisions. However, an argument is sometimes made by both policy makers and scholars that states without these satellite capabilities do not pursue arms control simply because they do not have the appropriate technology to observe compliance.⁴⁵ The question of satellite capabilities is a more specific version of the parameter already included in the models, a state's baseline ability to observe the other side, which is measured by wealth in the main models. However, it may be the case that as a particular technology, satellites provide an extra advantage that no other capabilities or resources provide.

I use recently collected data on when states acquire government controlled satellites to test whether this capability is associated with treaties.⁴⁶ The results show a positive relationship between satellite possession and treaties with both high and low monitoring capabilities. Interestingly, when the satellite variable is included, the nuclear weapons measure loses significance in most models, suggesting that these variables capture a similar concept – nuclear weapons states are also those which are more likely to have a satellite capability, at least in part because the missiles which deliver nuclear weapons share technology with satellite launch rockets. Importantly, although the results do support the intuition that satellite technology matters, this effect is not a substitute for the effects of domestic political volatility; including the satellite measure does not change the significance levels or even the approximate values for coefficients on the political volatility and policy distance variables.

It is also worth noting that I do not control for democratic similarity in the main models because it is likely a noisier measure for several concepts that I am already addressing through other controls. For example, joint democratic states could have more access to

⁴⁵See for example Glaser, "Realists as optimists: Cooperation as self-help," see n. 31 on the role of satellite observation in making arms control possible.

⁴⁶Bryan Early, "Exploring the Final Frontier: An Empirical Analysis of Global Civil Space Proliferation," *International Studies Quarterly* (Forthcoming). Early's data only goes through 2003, so I extend it through 2007 by applying capabilities that existed in 2003 to the next four years as well. While this basic technique may miss a few states which may have obtained satellite capability in the last few years, we would not expect states to lose any capability they had already acquired, so the simple extension is a good way to use more of the data with limited miscoding.

information about one another because their political systems are more transparent,⁴⁷ and so we might expect that they have reduced costs of observing one another's compliance in arms control. However, it is not clear that democracies would always be less secretive about military capabilities or technologies (especially if there might be violations of treaty commitments). Lower costs of observing compliance could be a function of dyads with generally high resources capacity which can invest more in intelligence or technology rather than just democratic ones. Joint democracies are on average wealthier dyads in my data, and all the models already control for dyad wealth.

Alternatively, we might hypothesize that democracies are, because of the nature of their political systems, more interested in formal legal institutions in general.⁴⁸ This would suggest that democratic dyads are more likely to have more treaties. However, the analysis already controls for treaties in the last 5 years (last 10 years tested as a robustness check) which captures treaty propensity for a number of reasons that might include either interests in international institutions or recurring security challenges. Democratic dyads on average have more treaties in the past 5 or 10 years than mixed or autocratic dyads. In effect, the other control variables are already capturing whatever factor we might expect to be different among democratic states, but in a way that allows us to assess non democratic dyads along a more detailed continuum as well. However, even if this logic for choosing controls with better precision is not convincing, or if there is still concern about democracy having separate effects, robustness checks performed with including a democratic similarity measure still yield very similar results for most models, with key explanatory variables and

⁴⁷Andrew Kydd, "Sheep in Sheep's clothing: Why security seekers do not fight each other," *Security Studies* 7, no. 1 (2007): 114–155.

⁴⁸Some research in international relations suggests that democracies are more willing to comply with international commitments because of their existing commitments to domestic constitutional obligations, so perhaps a similar logic would suggest that they are more likely to form them as well. Kurt Taylor Gaubatz, "Democratic States and Commitment in International Relations," *International Organization* 50, no. 1 (Winter 1996): 109–139.

also most controls significant and in the expected directions.⁴⁹

3.7 Conclusion

The results of the statistical analysis show strong support for my theory on the domestic political determinants of adversarial treaty design. I show that domestic events which have implications for greater uncertainty about foreign policy have significant effects on the likelihood of both low monitoring and high monitoring treaties. The effects of political volatility on treaty forms are conditional on the beliefs the states hold about one another.

As is often the case in international relations and particularly security studies research, causal claims are difficult to base on statistical results alone. My research design, variable selection, controls, and of course statistically significant results, give strong support for the causal effect of domestic political volatility. However, to develop deeper justification for these claims, the following chapters study the causal mechanism in specific cases of cooperation. Where statistical analysis cannot tell us how domestic changes were really interpreted by international adversaries, or how new beliefs come to play a role in treaty negotiations, the case studies rely on detailed evidence of a state's assessments, negotiation records, and internal debates specifically on information provisions to make those causal connections.

The theory is probabilistic; I am arguing that domestic political volatility will, on average, make agreements more likely and specific forms of agreements more likely under different conditions. This does not mean that the volatility factor will play a critical role in every case of observed cooperation. Large-n statistical analyses is particularly useful in making this kind of “on average” claim. Additionally, results demonstrating on average

⁴⁹These robustness tests were done on both the generalized order logit and the multinomial logit specifications, and also both with the base model as well as with a number of the robustness check models 2-4 in the Appendix. Democratic similarity is significant in some models but not others.

effects allow us to better understand the role of treaty determinants which might be difficult to observe in individual cases or overlooked by the historical record of well known agreements. However, the statistical analysis leaves open questions about how the factor affects outcomes in individual cases. If we believe that a variable does matter, then being able to observe it being operative in making an agreement more likely in a specific case makes the argument considerably stronger. The case studies presented in the next two chapters demonstrate that the hypothesized effect of domestic volatility and the uncertainty it creates can be observed not only in aggregate but also in cases that are both representative of the population of arms control agreements, and also important to better explain as historically important treaty outcomes.

Looking beyond the results presented in this chapter, it is also clear that the new data on arms cooperation provisions gives us the opportunity to study an outcome of adversarial interaction which too often fades in to the background, overshadowed by a plethora of large-n studies about the initiation of war. In fact, arms control is often another – perhaps often more appealing – option for responding to a security threat. The September 2013 debate over intervention in Syria – where policy makers explicitly chose to pursue arms control over the use of force – and the ongoing efforts to create an agreement to restrain Iran’s nuclear program clearly demonstrate that treaty design is a significant security response which is distinct from aggression or inaction. That it has not received the same research treatment as conflict is indicative of both insufficient theory on security institutions and poor data on their forms over time. This chapter is a first step to remedy this gap in our empirical analysis of conflict and cooperation.

Chapter 4

Soviet Leadership Change and the Intermediate Nuclear Forces Treaty

4.1 Introduction

President Reagan famously enjoyed quoting a Russian proverb, “Trust but Verify.” However, the context of one of the most intrusive arms control treaties suggest a reality that reverses the proverb’s sentiment. States seek to verify when they do not trust one another; where trust is strong there should be no need for costly information exchange procedures. President Reagan had a profound distrust of Soviet intentions, and would seem to be the least likely US leader to pursue institutionalized restraint on capabilities through arms control. However, it is the Reagan administration that designed one of the most intrusive and ambitious treaties between the two superpowers, one that not only reduced arms but also eliminated a class of missiles. The formation of this agreement, and the particular form that the treaty ultimately takes, is a story that crucially relies on the domestic political changes in the USSR and the Reagan administration’s perception of their adversary’s new leadership in Mikhail Gorbachev and a transformed foreign policy leadership. The experience of US-Soviet arms control

shows that treaties with highly intrusive information provisions have emerged from moments characterized by both very high distrust and the introduction of additional uncertainty about the adversary's future intentions.

The Intermediate Nuclear Forces Treaty (INF) was signed on December 8, 1987 in a ceremony at the White House during Gorbachev's first trip to the United States. The treaty eliminated all intermediate range missiles (ranges from 500-5000km) possessed by both states and banned their future production. On the Soviet side, these were the SS-20 missiles, which threatened Western Europe and carried three independently targetable nuclear warheads each. From the US, the INF eliminated the Pershing II and GLCM missiles, which were deployed in Europe in the early 1980s as a response to the Soviet system. The systems were seen by both sides as highly destabilizing – the Soviet capability gave them quicker, more accurate, and more numerous ways to threaten European targets.¹ The US Pershing II missiles were arguably an even bigger threat for the USSR however, as they would allow the US to threaten Moscow from European territory and would leave the USSR to bear the burden of escalating to full out nuclear war by retaliating against US intercontinental targets, a threat may not be credible.²

¹Jack F. Matlock, *Reagan and Gorbachev: How the Cold War Ended* (New York, NY: Random House, 2004), 38.

²In later writing, Gorbachev called the SS-20 a terrible mistake of the Brezhnev era. In deploying the intermediate range missile and failing to anticipate the US response with its own missiles, the USSR was “pointing a gun to our own heads.” See also Gorbachev's memoir for similar quote on INF missiles as a “pistol held to our head.” Mikhail Gorbachev, *Memoirs* (New York, NY: Doubleday, 1995), 444. This was not just a public phrase, as Gorbachev also used it in private meetings with his staff, such as in meetings to prepare for Reykjavik. For records of Soviet internal discussions, see the documents collection [in Russian]: Gorbachev Foundation, *Otvechaya na vyzov vremeni. Vneshnyaya politika: perestroyki dokumentalnye [Answering the call of time. Foreign policy restructuring: the documentary evidence]* (Moscow, Russia: Ves Mir, 2010), 167. Another revealing account of how Soviet leaders themselves did not see good options for this strategic problem comes up in an interview with one of Gorbachev's senior advisors, Vitalii Kataev by John G. Hines in 1993. Hines asks how the USSR would respond to a limited NATO nuclear strike on Soviet forces, “end the world by retaliating with a massive strike? Ignore the strike? Respond with limited strikes and negotiate?” Kataev responds: “[After a fairly length and very serious pause] I just don't know. That would be a very tough decision.” John Hines, Ellis M. Mishulovich, and John F. Shulle, *Soviet Intentions 1965-1985 Volume II: Soviet Post-Cold War Testimonial Evidence, Unclassified, excised copy*, Interview with Vitalii Leonidovich Kataev, Senior Advisor to the Chairman of the Defense Industrial Department

Soviet leaders also believed that the Pershing II range could reach Moscow, and thereby threaten Soviet command and control centers.³ However, although both sides a situation with no intermediate range missiles, the next best solution was to both have them and by far the worst outcome was an adversary with unmatched capabilities.

The INF treaty includes provisions for extensive information exchange between the adversaries. The US and USSR agreed to exchange data on their capabilities, to not interfere with satellite observation, and most importantly to allow for inspectors of the other side to enter into the state's territory and confirm the elimination of missiles at deployment sites. To prevent the creation of new missiles, inspectors were allowed to continuously monitor the gates of a relevant missile production facility in the adversary's territory.

INF negotiations began in 1981 and faced a complete standstill through 1983, when the Soviet delegation walked out in protest of the start of Pershing II deployments by the US. During this first period, the US never presented a full proposal and the USSR never came close to clarifying any of its positions. The most promising negotiated solution, the so-called "Walk in the Woods" proposal, was rejected by both sides both due to its terms and its lack of extensive information exchange provisions. The second period of INF negotiations, 1985-1987, was far more fruitful with multiple proposals and shifts in positions on both sides, including extensive debate on verification provisions. However, a number of the underlying factors that could theoretically contribute to an agreement were constant in both time periods: defense spending and plans for advanced weapons programs in both countries was high (including US plans for missile deployments and early plans for missile defense),

of the Communist Party Central Committee, BDM Federal, Inc, September 22, 1995, National Security Archive, Electronic Briefing Book 285: Previously Classified Interviews with Former Soviet Officials Reveal U.S. Strategic Intelligence Failure Over Decades.

³In fearing a decapitating attack on command and control centers, the USSR actually overestimated the capabilities of the Pershing II, but at the time the US was not able to convince them that the missile was not as threatening as they believed. William Burns, Major General (retired), Joint Chiefs of Staff representative to the INF negotiations 1981-1986, Principal Deputy Assistant Secretary of State for Political Military Affairs responsible for INF issues, 1986-1987, interview with the author, May 15, 2015.

the Soviet Union was facing rising economic difficulties that nonetheless were not affecting the defense sector, and the basic political system of each state remained unchanged.

The key puzzle of the INF is twofold. First, why were the US and USSR at first unable to come to an agreement on any limitation of intermediate range missiles and then a few years later able to sign a highly ambitious treaty? Second, why were the adversaries able to design a treaty with unprecedentedly high degrees of information exchange rather than opting for no agreement or an agreement with lower levels of monitoring?

This chapter argues that looking at domestic political changes in the leadership of the USSR is crucial to understanding both the outcome of a treaty on intermediate missiles and the form that the treaty takes. US policymakers observed Gorbachev assuming leadership in the USSR, as well as his moves to replace key cabinet officials. This change in leadership created greater uncertainty about Soviet intentions in foreign policy. While previously US officials and intelligence agencies were firmly convinced of Soviet duplicity and attempts to gain an advantage in security, Gorbachev's intentions were unclear. Estimates at the time were torn between interpreting Gorbachev as bringing about new policies and Gorbachev as continuing the same aggressive approaches of prior Communist hardliners. This uncertainty however, and the possibility of an altered Soviet position, motivated the US to pursue serious treaty proposals which it had previously avoided.

At the same time, it is important to understand why the USSR accepted a treaty with such intrusive verification. Though it was difficult to perceive at the time, Gorbachev did intend a major change in Soviet policy, including a decrease in military competition with the US in favor of greater attention to domestic economic problems. The treaty was acceptable because if Gorbachev's intended changes were implemented, the USSR would have nothing to hide. Intrusive verification would not bring the costs of being caught cheating or military advantages inadvertently collected, while at the same time bringing the advantage of holding a potentially aggressive United States more accountable. As the level of acceptable infor-

mation exchange for the USSR increased, Gorbachev also began to see signs of moderation from his US counterparts, and bargaining space for a treaty emerged. However, the preferred treaty form is one with intrusive rather than low level verification because both states are coming not from a position of trust, but from strong prior beliefs that the adversary only seeks to gain a security advantage from engaging in deceptive cooperation.

Historians, journalists, and political scientists have assessed the period of Gorbachev's rise to power and the end of the Cold War in many ways. Today, the Soviet political change is widely recognized as bringing about a fundamental change in US-Soviet relations. However extensive, the historical and journalistic accounts of Gorbachev and Reagan fail to account for how the two adversaries came to design a specific kind of institution to address their security challenge. As this chapter will demonstrate, the common explanation for the INF treaty – that the new Soviet leader simply gave in to all US demands– overlooks a significant degree of bargaining and change in position on both sides, motivated by increased uncertainty about the opponent's intentions. While sometimes painted as a foregone conclusion, the treaty's information exchange provisions were hotly debated throughout the negotiations, with final decisions made at the presidential level. This chapter re-examines the rich historical record on US-Soviet arms control interactions to better reveal a previously oversimplified story of INF treaty design.

The chapter proceeds in five sections. The first section provides a layout of the research methodology used in this case study, applying the general theory hypotheses to the INF case, highlighting the advantages of in-case comparisons, and identifying the variables assessed in the narrative. Section 3 looks at the first period of negotiations from 1981-1983, which is a negative case with no treaty negotiated. The section provides an assessment of how the US and USSR perceived their adversary's interests and the implications for arms control, including a look at a failed treaty proposal. Section 4 focuses on the shift in Soviet

leadership and the impact of that domestic political volatility on US perceptions of Soviet intentions. Importantly, this section highlights that Gorbachev’s “new thinking” was not clearly observed, and it is not the case that the US simply saw new Soviet leadership as more likely to comply with agreements. Section 5 connects uncertainty about Gorbachev to new US approaches on INF treaty negotiations and identifies key moments of Soviet compromise on verification provisions. The section traces the meetings through which the ultimate form of the INF treaty emerged, culminating in its December 1987 signature. Section 6 steps back to address the INF as a case of adversarial treaty design more broadly and also notes the inadequacies of several alternative explanations.

4.2 Case study analysis

There are many historical accounts of the interactions between Reagan and Gorbachev at the end of the Cold War, and the period in general has been the subject of much scholarly work. The INF treaty is often treated as one piece of this broader story, which also focuses on the debates over the Strategic Defense Initiative and negotiations over the START I, a treaty to limit strategic nuclear arsenals. While the story of the end of the Cold War or the Reykjavik Summit has been told in numerous sources, there remains a historical gap on several INF dynamics, including the emergence of the verification regime.

In the context of the theory developed in Chapter 2, the INF case provides a test of the effect of a change in beliefs about the adversary on the type of arms control treaty that emerges. During the first period of negotiations, the US was convinced that the USSR was a type of state with high incentives to cheat. The degree of information exchange needed for a treaty under these conditions is very high, making it too costly for both sides, and consequently no treaty is observed. Then in the second period, uncertainty about the USSR’s intentions increased, and the US came to believe that there was a somewhat higher

chance that the USSR may be a cooperator type after all. Under these conditions, the US was willing to accept a somewhat lower level of information exchange, and these provisions were then acceptable to both sides and a treaty emerged out of negotiations. The key driver of new uncertainty in beliefs was the leadership and cabinet level changes in the USSR. This story falls at the far right of the Figure 2.3 in Chapter 2, where bargains go from no treaty outcomes to a treaty with high information exchange provisions.

4.2.1 Hypotheses

In the case study, I evaluate the key variables that form the argument: the beliefs about the other state; the occurrence of domestic political volatility; the response in the opponent state and whether uncertainty increased; and the outcome in whether a treaty was signed and information provisions it adopted. In the INF case, the political shift occurred on the Soviet side, so the most telling indicators for the purposes of testing the theory come from US responses and changes in US negotiating terms. The hypotheses below provide the theoretical expectations at each step, identifying the kinds of observations that would support a causal connection between political shifts and treaty outcomes.

- Hypothesis 1: When the US is sure that the USSR will try to cheat on or circumvent an agreement, it will demand a very high level of information exchange provisions, one that it knows the USSR will reject. No deal will be signed under these conditions.
- Hypothesis 2: Leadership change in the Soviet Union (not only with Gorbachev but also his senior leadership) creates greater uncertainty in US views of Soviet intentions, though not simply a belief that the Soviet Union is more likely to comply with cooperation. The new leadership will be seen as either likely to pursue new foreign policies, or possibly as being more of the same and continuing the policies of the prior leaders.

Importantly, the baseline beliefs held about the adversary play a role in the kind of treaty that emerges following an increase in uncertainty. Since the US and USSR start with strong beliefs that the other has strong incentives to cheat, even when beliefs change they continue to view one another with suspicion.

- Hypothesis 3: Following an increase in uncertainty about Soviet intentions, the US should be willing to offer and accept an agreement with somewhat lower information exchange provisions, which it reasonably expects the USSR to accept and which are acceptable to the US as well.
- Hypothesis 4: The proposed verification provisions are less costly than prior to the domestic political shift, but the USSR still needs to actually see them as such, and not as prohibitively costly to accept. This involves changes in Soviet assessments of verification and/or shifts in its own perceptions of US incentives, which should be observable in the internal Soviet debate on information provision options.

An arms control agreement can emerge under the condition of hypotheses 3 and 4. This deal will have highly intrusive verification procedures that reflect negotiated compromises on both sides.

Finally, the theory also implies an additional observable implication about the treaty design process:

- Hypothesis 5: The treaty and the form that it takes should be the result of changes in positions and ongoing negotiations rather than previously made political decisions just getting implemented. We should therefore expect to see signs of alternative outcomes being considered by the actors during both time periods, such as a treaty with different types of provisions or no treaty at all.

4.2.2 Alternative explanations

The domestic political volatility hypotheses stand in contrast to several other alternative explanations for the INF treaty case. I introduce these here with a preview of evidence, and then return to each in Section with a more detailed evaluation after presenting the full historical data in the case.

First, it is possible that the USSR was essentially forced to accept the preferred US treaty because the status quo of arms competition had become too costly for them. As Soviet capabilities and defense sector resources declined, the state needed to limit threats from the US, even if doing so involved paying the high costs of verification. As the Soviet position weakened, we would expect to see it become increasingly more likely to sign the type of treaty that the US preferred. However, as the evidence presented will show, the USSR's decline in power relative to growth in US capabilities did not change significantly between the two periods of INF negotiations. The underlying power transition likely contributed to an overall higher probability of compromise on the Soviet side though-out the 1980s, but as the first period of negotiations demonstrates, treaty-based cooperation was not the only approach the USSR could choose to pursue. Additionally, an explanation based on power transition does not account for why the US accepted an arms control agreement. The US gave up the potential for a growing advantage against key USSR capabilities and accepted the risk of cooperating with an adversary which had previously cheated on agreements and had strong incentives to do so again.

A second possible explanation suggests that the primary driver of the INF treaty was ideological change in the USSR. Because Gorbachev had new ideas about the USSR's relationship with the West, and new thinking about openness in Soviet society, he was willing to accept both cooperation with the US and much higher levels of information exchange. If this explanation is Again, it is clear that Gorbachev's ideas contributed in part to a reassessment of arms control and its verification tools. However, a change in Soviet beliefs alone,

though important, does not fully explain the treaty outcome. As the historical evidence below demonstrates, the US did not perceive the extent of Gorbachev's new thinking at the time of INF negotiations, and would have had good reason to doubt claims of cooperative intentions by the USSR. The ideological change factor therefore explains only half the story, on why the USSR shifted position but not why the US accepted compromise as well. Further, even if Gorbachev had new ideas about what policies were needed in the USSR for economic survival, why did Soviet leaders come to expect that the US would hold up its end of the arms control bargain? Facing a US president who in his first term announced plans for missile defense and called the USSR and "evil empire," the USSR would have had many reasons to doubt US commitments to restraint, irregardless of new thinking and perestroika.

Finally, we can revisit the socialization and learning alternative theories discussed in Chapter 2. From this point of view, the INF treaty was driven by the effects of prior experience with security institutions on US and Soviet understandings of arms control tools. The two states had already established an accepted behavior of using arms control treaties to address their nuclear competition, and were increasingly likely to turn to a negotiated solution again. Through the process of participating in prior agreements, the US and USSR had learned both about information sharing tools and eachothers' incentives for long term cooperation. With the INF, we observe highly intrusive monitoring features that built on longer process of incremental learning and socialization into increasing openness in information exchange. If this explanation is correct, then we should observe repeated prior cooperation at lower monitoring levels and efforts by negotiators to reapply prior tools. However, while there are treaties before the INF, agreements such as SALT II are seen by policymakers as models to be rejected rather than extended. The evidence also shows that new verification tools negotiated for the INF were highly contentious, and went against strong internal norms for military secrecy in both states but particularly the USSR. Experience with confidence building measures and common practices in information exchange was largely lacking prior

to the INF treaty.

4.2.3 Research design: constant conditions within the case study

This chapter employs a within case comparison research design. We observe two periods of US-Soviet interactions, which result in different treaty outcomes. Why did the INF not come about earlier, when the threat posed by the missiles systems was already apparent for both sides? Why are the two states ultimately able to agree on intrusive verification when other information provision options had been both used for other agreements and considered in this case?

The two periods are similar along a number of key dimensions, which allows us to isolate the effects of the changes that do occur. Some of the basic variables are clearly held constant: whatever might be unique to the US, USSR, or their relationship with each other is of course the same, and by definition the two comparison periods feature state participants that have the same cooperation and conflict history with one another. The military power balance, an important possible determinant of security cooperation, is also relatively constant between the two periods. The US and USSR had achieved parity in the mid-1970s, and had approximately evenly matched capabilities deployed going into the 1980s.

The Soviet economy was in trouble throughout the whole time period of the 1980s. But, while US intelligence analysts observed the serious economic downturn, they also did not expect it to have near term effects on the defense sector. A 1981 intelligence estimate stated that “Moscow apparently has decided to pay the price of higher military spending. Despite the heavy defense burden and the problems facing the economy, there is not evidence to indicate a basic shift in priorities or a reallocation in resources to benefit the consumer. All indicators of future defense spending, [redacted] suggest a continued momentum well

into the 1980s.”⁴ Economic conditions were expected to worsen by the late 1980s, but the implication of this change for Soviet defense policy was unclear; Soviet leaders could either impose austerity to support high defense spending or could move to reallocate resources. In 1981 the CIA estimated that the first strategy was more likely.⁵ The Soviet system could undergo quite a bit of strain, but the defense sector would likely be the last to be affected.

There is no indication from intelligence estimates that this assessment of defense spending changed in the second period of INF negotiations. An intelligence assessment in 1984 saw the Soviet Union as continuing to build up missile capabilities, and poised to move beyond the limits of the last strategic arms agreement, SALT II. Further, while the USSR would not be able to compete with the Strategic Defense Initiative directly (due to limits in their development of computers) they would likely respond to SDI with a greater investment of resources and developments of various countermeasures.⁶ In sum, although economic deterioration was likely even more acute in the late 1980s and second round of INF negotiations, it was not a major change from the assessment of the prior period, and importantly one that was not expected to quickly affect defense spending.

The source of decision making on arms control security issues was very centralized in the upper levels of the executive branch in both the US and USSR during both periods. Soviet decisions on military policy were made in the Politburo and the Defense Council, which was chaired by the Party Chairman and is made up of top Politburo members⁷ and arms control decisions were largely approved by a group referred to as the Big Five, made

⁴Central Intelligence Agency National Foreign Assessment Center, Soviet Economy Branch, Office of Economic Research, “USSR: Economic Issues Facing the Leadership: An Intelligence Assessment,” ER 81-10009, Jan. 1981, CIA FOIA Electronic Reading Room.

⁵Ibid., 8.

⁶National Security Planning Group Meeting 100, “Soviet Defense and Arms Control Objectives,” Nov. 30, 1984, The Reagan Files.

⁷David Holloway, *War, Militarism, and the Soviet State* (New York, NY: Institute for World Order: World Order Models Project, 1981).

up of highly influential Politburo members.⁸ It was clear to US observers at the time that while the Soviet leader himself had considerable influence, he did not have a completely free hand in security decisions.⁹ Decision making in the US on most arms control treaties, and especially the INF, came out of a process inputs from multiple bureaucratic actors within the US government. However, a single position did emerge from the debate, and there was a concerted effort within the government, usually in the National Security Council, to reconcile differences of opinion into a position. Many of the most important decisions on the INF treaty were made at the Cabinet and even the Presidential level. In other words, the form of both US and Soviet positions on INF was not the result of a least common denominator type of compromise between different bureaucratic views, but rather deliberate executive decisions.

Finally, as will be shown more explicitly in the historical analysis, the general orientation of US and Soviet beliefs about each other did not undergo a fundamental change in the two time periods. In some ways, this feature of the case study comes from considering two close time periods, separated by just a few years. Both sides were still bitter adversaries and still viewed one another with great suspicion. Both continued to expect that the opponent could have strong incentives to cheat on an agreement. The evidence documented in this case study will show that a belief of strong mutual suspicion stretched well into the period of INF negotiations and continued after the treaty was signed as well. The continuity of general beliefs about the adversary is important for the comparison because it allows us to focus on uncertainty of beliefs rather than a scenario where the treaty outcome could be

⁸Alexander G. Savelev and Nikolay N. Detinov, *The Big Five: Arms Control Decision-Making in the Soviet Union* (Westport, Conn.: Praeger, 1995).

⁹The Soviet security and general foreign policy process was not clearly observable to the US, and some intelligence documents even explicitly noted that judgments were tempered by uncertainty about the Politburo decision-making process. Director of Central Intelligence Special National Intelligence Estimate, *Implications of Recent Soviet Military-Political Activities*, SNIE 11-10-84, Nov. 10, 1984, CIA FOIA Electronic Reading Room.

attributed to fundamentally different types of expectations about the partner state.

4.2.4 Note on sources

This chapter relies heavily on primary sources on both the US and Soviet side, including archival documents, memoirs of key participants, and interviews which I conducted in Washington DC and in Moscow (June 2013 – June 2014) as well as transcripts that are part of archival and oral history collections. Minutes and notes from private high level meetings, as well as intelligence materials, are particularly important for assessing US and Soviet perceptions of one another at the time that these beliefs were held, rather than through the lens of retrospective accounts. Many of the intelligence documents used in this chapter, including National Intelligence Estimates and CIA assessment have been only recently declassified (some only in 2011), and were not available when the bulk of the writing on this period was done in the 1990s.¹⁰ The National Security Archive, which is one of the best curated resources on international security topics, has released collections of both US and Soviet documents on the INF treaty period about once a year from 2005 to 2008, in most cases making documents publicly available for the first time.¹¹ I also use a number of documents from other archive collections, notably the Ronald Reagan Presidential Library, Kataev Papers at the Hoover Institution, and document compilations from the Cold War History Project

¹⁰The majority of assessments and declassified documents used in this chapter have been made available through the Freedom of Information Act and are accessible directly from the CIA and State Department online archives: Central Intelligence Agency FOIA Electronic Reading Room, www.foia.cia.gov; US Department of State FIOA Virtual Reading Room, www.foia.state.gov. Several other documents and intelligence assessments originally come from other archival sources, but have been assembled in two very useful collections: Brown University, *Understanding the End of the Cold War Reagan/Gorbachev Years, An Oral History Conference (documents collections)* (May 7-19, 1998).

¹¹The National Security Archive includes both curated documents arranged into Briefing Books, and a larger digital database for searching individual documents. National Security Archive, George Washington University, www2.gwu.edu/nsachiv/.

at the Woodrow Wilson Center.¹² These documents have either been contributed to document readers for special projects, or shared with me directly. Finally, many of the high level participants from this period have written memoirs, and the negotiations on the INF treaty feature prominently in a number of accounts, particularly from Former Secretary of State George Shultz, whose memoir is the most comprehensive on foreign policy issues.

I supplement archival material with interviews of both US and Russian arms control experts and treaty negotiators. Often details on changes in negotiations or the role of verification are not included in broader historical accounts, so the interviews help fill in such gaps with more detail on shifts in negotiation positions, and also give more information on impressions of the participants.¹³ I interviewed individuals who were personally involved with the INF negotiations at several levels, including individuals who had been senior officials at the State Department, and those who negotiated with Soviet counterparts in Geneva. In Moscow, I spoke to several arms control experts who worked on the INF and other treaties earlier in their careers, and also with Pavel Palazchenko who was Mikhail Gorbachev's personal interpreter throughout this period.¹⁴ Finally, the chapter makes close

¹²An extensive collection of Reagan Presidential Library documents is maintained online by "The Reagan Files," documents from the Ronald Reagan Presidential Library, collection by Jason Saltoun-Ebin, www.thereaganfiles.com. The Kataev Papers is a significant new collection that the Hoover Institution acquired in 2002 and made available for researchers several years later. Vitalii Leonidovich Kataev was a senior adviser to President Mikhail Gorbachev on military doctrine, arms control negotiations, and defense policy. His papers include reports, memoranda, correspondence, diaries, notes, meeting and conference materials. These documents are in Russian and when cited below, I use the English title of the document as provided by the library finding aide, and my own paraphrasing or translation for content. Vitalii Leonidovich Kataev Papers 1966–1999, Hoover Institution Archives, Stanford University, collection number 2002C48.

¹³The archival record is also biased towards higher level decision making because while many National Security Council records have been declassified, relevant documents from the State Department, Arms Control and Disarmament Agency, and the Defense Department are not yet available. The State Department Office of the Historian is currently working on a Foreign Relations of the United States (FRUS) volume on the INF treaty (1981–1988, Volume XII, INF, 19841987), which will likely be published in the next several years.

¹⁴A full list of individuals interviewed is provided in the bibliography. The interviews were all semi-structured or unstructured in format, and conducted in English and in Russian. Some interviews are cited directly in the chapter, while others informed my approach more generally.

use of interviews conducted in 1988-1990 by Washington Post journalist Don Oberdorfer, who interviewed most of the senior level players for his 1991 book, *The Turn*.¹⁵ The interview transcripts, which contain far more detail than the book, provide unique view into the period, captured during a time when recollections of notable details were still fresh in the minds of participants.¹⁶

4.3 Early negotiations: 1981-1983

The first phase of negotiations on the INF treaty began in 1981 and ended with the USSR walking out from the negotiating table in 1983. The US had made a number of general proposals for a treaty on intermediate range missiles, as had the USSR. Both sides were quick to reject one another's proposals. A close analysis of the period strongly suggests that offers on the US side –including demands for extensive verification provisions – were not made with the expectation that the USSR would reject them. During this period, the US saw the USSR as a state that was actively seeking military advantages, particularly in the area of nuclear arms, likely to follow a growing pattern of cheating on arms control agreements, and fundamentally uninterested in long-term gains from cooperation. Further, the historical evidence shows that at the time, the US did not expect Soviet security policy to change in the near term, both due to the influence of the military industrial complex and due to strategic intentions of the USSR.

The USSR deployed the SS-20 missiles during the Brezhnev era as part of an expansion in military capabilities. The USSR had long placed a high priority on its defense sector and nuclear capabilities as a source of international power and prestige. In the late 1970s

¹⁵Don Oberdorfer, *The Turn: From the Cold War to a New Era, The United States and the Soviet Union 1983-1990* (New York, N.Y: Poseidon Press, 1991).

¹⁶ Don Oberdorfer Papers, 1983-1990, Public Policy Papers, Department of Rare Books and Special Collections, Princeton University Library.

they had focused on improving regional capabilities by pursuing new theater conventional and regional forces.¹⁷ Some historians argue that the choice to pursue intermediate range missiles was a response to the military industrial complex and its desire for more resources devoted to arms racing rather than for any specific strategic reason. The Soviet military industrial complex was a dominant and generally unchallenged force in Soviet politics, and had consistently extracted a high degree of resources from the Soviet economy since the end of WWII. While the communist party had clear control over the military, the relationship was not an antagonistic or distrustful one because military interests were given priority in policy issues. Previously, some of Khrushchev's policies had met with internal opposition, suggesting that "a drastic shift in priority away from the area of defense would run into opposition from not only the military and industrial circles, but also from within the Party"¹⁸ Scholars assessed that change in Soviet military policy was not impossible, but it would be limited and likely to be driven by internal forces rather than through the influence from foreign actors such as the U.S.¹⁹

U.S. plans for deployment of intermediate range missiles were motivated by European fears of new Soviet capabilities, combined with concerns about the US security guarantee. The "Euromissiles" were necessary to maintain the strength of the alliance and reassure the Europeans. The deployment was part of the so called "dual track" decision, whereby the US would both plan to place the missiles in European counties and at the same time carry out negotiations with the Soviets to seek an arms control solution to the problem. Strong public opposition to nuclear arms and new deployments in Europe made the negotiations element critical for public relations, even if results were unlikely.

¹⁷Central Intelligence Agency, "The Soviet Challenge: The Determinants of Soviet Behavior," Paper, 1982, Reagan Collection, CIA FOIA Electronic Reading Room.

¹⁸Holloway, see n. 7, 27.

¹⁹Ibid.

4.3.1 US beliefs about the USSR

When adversaries have strong beliefs that their opponent has high incentives to cheat on cooperation, we would expect them to be unlikely to sign an arms control treaty because the level of monitoring needed to catch and deter cheating would be more costly than simply maintaining the status quo arms competition. During the early 1980s, the US saw the Soviet Union as having an assertive foreign policy and seeking geopolitical advantage in the third world.²⁰ The Reagan administration also approached the Soviets with even greater suspicion than their predecessors, and saw the need for greater military strength to counter Soviet hostility.²¹ Specifically on arms control, the US expected that the Soviets would be likely to try to cheat on an agreement or at least use the negotiations as a way to trap the US into commitments that then put the USSR at a military advantage. This view was supported by two main observations by US policymakers: continued Soviet capacity for military build up and instances of Soviet cheating on arms control agreements already in place.

The US believed that the USSR not only desired to maintain military competition with the US, but also had the capability to do so. There was indeed recognition by the early 1980s that the Soviet economy was deteriorating, and that economic difficulties would impact eventually the USSR's ability to keep up with the West in military capabilities. The USSR was however starting to decline from a position of strength – the 1981 intelligence estimate on the relationship between Soviet economy and capabilities noted that the strain was coming at a time “when the Soviet military position vis-a-vis the West has never been stronger.”²² The report also noted that despite strains on the civilian economy, defense

²⁰Central Intelligence Agency, “The Soviet Challenge: The Determinants of Soviet Behavior,” Paper, see n. 17.

²¹David T. Jones, ed., *The Reagan-Gorbachev Arms Control Breakthrough: The Treaty Eliminating Intermediate-Range Nuclear Force (INF) Missiles* (Washington, DC: Vellum New Academia Publishing, 2012), 18.

²²Director of Central Intelligence Special National Intelligence Estimate, *Dependence of Soviet Military Power on Economic Relations With the West*, SNIE 3/11-4-81, Nov. 17, 1981, CIA FOIA Electronic

expenditure in the USSR continued to rise. In the face of future economic difficulties, the Soviet leadership would be likely to restrict private consumption and let living standards fall in order to maintain growth in defense spending.²³ Another CIA assessment stated that, “absolute reductions in the defense effort seem unlikely” even if the Soviet Union began to experience increased economic decline through the 1980s. Given the huge size of Soviet military investment, “military capabilities would continue to increase well into the 1990s” even with no economic growth.²⁴

A second major factor informing US beliefs about Soviet intentions was Soviet cheating on recent arms control treaties. During this period, the US was very concerned about Soviet cheating across numerous arms control agreements, including SALT I, SALT II, the Helsinki Accords and the Threshold Test Ban treaty. (Even though some of these were not ratified and not in force at the time, both sides were claiming to abide by the restrictions and referred to failures to do so as violations.) The widely held perception was that the USSR had cheated on agreements with all kinds of cooperation partners, engaging in both small and large violations.²⁵ Studies assessing possible cheating were done by independent groups, individual agencies, and also through a major inter-agency review in 1983.²⁶

The most significant charge was Soviet violation of the ABM treaty (SALT I). The USSR had built a radar in Krasnoyarsk, which the US suspected to be intended for missile defense. (The USSR claimed it was an early warning radar.) The ABM treaty banned such installations outside two predetermined areas. On the US side, the allegation of Soviet

Reading Room, 3.

²³Director of Central Intelligence, *Dependence of Soviet Military Power on Economic Relations With the West*, SNIE 3/11-4-81, see n. 22, 11.

²⁴Central Intelligence Agency Paper, *Response to NSSD 11-82 U.S. Relations with the USSR*, Dec. 6, 1982.

²⁵Jones, see n. 21, 5.

²⁶National Security Planning Group Meeting 81, “Meeting on Soviet Noncompliance with Arms Control Agreements,” Dec. 20, 1983, The Reagan Files: National Security Council and National Security Planning Group Meetings.

cheating rose to a serious and public level, including numerous internal government assessments, reports to Congress, and hearings.²⁷ US officials formally confronted the USSR about the violation, and were met with adamant denial by the Soviet side. The extent to which the Krasnoyarsk radar violated the ABM treaty actually remains questionable today, but at the time most high-level US officials saw the incident as a strong indicator of Soviet goals. The US intelligence community consistently assessed cheating on arms control as a strategic goal of the USSR, not a case of bureaucratic or military failures to follow directives.²⁸ This assumption was likely a good one in the case the ABM, as there is some evidence from the Soviet side suggesting that officials were aware that the Krasnoyarsk radar would be a minor or “technical” violation of the ABM treaty that would be manageable in terms of the US response.²⁹ In other words, it is likely that the USSR was violating the treaty intentionally rather than because of a mistake in planning or understanding.

Minutes from NSC committee meetings suggest that many US officials approached arms control with the assumption that the USSR would cheat if they were not being closely watched, and they worried that the USSR would continue cheating on agreements for years before the US would be able to observe a violation, which would put the USSR at an advantage.³⁰ Similarly, intelligence estimates pictured the Soviet view on cheating as not desirable

²⁷For example, Ronald Reagan, “Message to the Congress Transmitting a Report and a Fact Sheet on Soviet Noncompliance With Arms Control Agreements,” Jan. 23, 1984, Ronald Reagan Presidential Library. Soviet Treaty Violations: Hearing Before the Committee on Armed Services, United States Senate, Ninety-eighth Congress, Second Session, March 14, 1984.

²⁸In my extensive review of intelligence documents from 1980-1988, I found only one document that makes a reference to the possibility of “accidental cheating” by the USSR, where the political leadership would actually not know themselves to violating. The view was an alternative explanation to the main points presenting in the NIE, and did not clarify whether the issue was a different interpretation of the violating behavior or a lack of information that it was happening. Director of Central Intelligence Special National Intelligence Estimate, *Gorbachev’s Policy Toward the United States, 1986-88*, SNIE 11-9-86W, Sept. 1, 1986, CIA FOIA Electronic Reading Room.

²⁹Savelev and Detinov, see n. 8, 100.

³⁰The comments are made in an NSC meeting focusing on verification questions but where only somewhat vague handwritten notes are available as documentation. The meeting appears to be about START specifically, though comments on cheating appear to apply to the USSR’s behavior in general. The notes

– all things being equal– but “where important interests are at issue, it is justifiable.” Additionally, the Soviets were seen as being sensitive to getting caught: “The key determinant [in cheating] is the interest that requires cheating versus the USSR’s ability to conceal it or manage the consequences of its revelation.”³¹

In addition to the assessments based on Soviet capabilities and past behavior, CIA documents and accounts of high level internal meetings reveal US expectations of Soviet behavior on future agreements, and specifically an INF agreement. If the USSR intended to cheat on the INF, even the best verification provisions would not give the US the confidence to know that violations would be observed. The reason that the Administration could not logically “throw up its hands and walk away from the issue” was domestic pressures from the Senate and international demands from NATO allies.³² Indeed, US intelligence saw military gains over the US as a likely goal of the USSR arms control agenda. The CIA noted that “the Soviets will seek to slow or halt US and NATO force improvements through a combination of threats, inducements, and arms control negotiations, while trying to maximize prospects for a continuation of trends favorable to them.”³³ Soviet interests in arms control during this time were interpreted as efforts to slow US programs in order to help Soviet planning.³⁴ During the early INF negotiations specifically, the CIA warned that that Moscow “may

also indicate the President raising the “zero option” suggesting that INF was a topic of this discussion as well. National Security Council Meeting 59, “START,” Aug. 9, 1982, The Reagan Files: National Security Council and National Security Planning Group Meetings.

³¹Director of Central Intelligence, *Gorbachev’s Policy Toward the United States, 1986-88*, SNIE 11-9-86W, see n. 28.

³²Strobe Talbott recounts President Reagan going through this logic at an NSC meeting on August 9, 1983. Strobe Talbott, *Deadly Gambits: The Reagan Administration and the Stalemate in Nuclear Arms Control* (New York, NY: Vintage Books, 1985), 292.

³³Director of Central Intelligence Special National Intelligence Estimate, *Soviet Potential to Respond to US Strategic Force Improvements, and Foreign Reactions*, SNIE 11-4/2-81, Oct. 6, 1981, Reagan Collection, CIA FOIA Electronic Reading Room, 26.

³⁴Central Intelligence Agency, “The Soviet Challenge: The Determinants of Soviet Behavior,” Paper, see n. 17.

also take certain military steps to gain leverage during the INF talks and to increase Soviet military capabilities.”³⁵ These assessments suggest that like other tools, the US believed that arms control was viewed by the USSR as a way to gain some advantage while the US was restrained.

4.3.2 Soviet beliefs about the US

At the same time, the USSR saw the US as highly aggressive and the Reagan administration in particular as having high incentives to take advantage of any Soviet weakness. A number of foreign policy moves by the US were making the USSR increasingly suspicious of American intentions with regard to cooperation. From the Soviet perspective, US offers for arms control seemed like public relations tools intended to woo European audiences while covering up US intentions to race ahead of the USSR.

During the 1970s, Soviet leaders increasingly believed that military strength was needed to counter US aggression. Senior Soviet leaders saw the US as trying to create challenges for the Soviet security and foreign policy where ever possible, in Europe and in the Far East.³⁶ With the Reagan administration coming into power, the USSR saw an even bigger threat, and they appeared to take Reagan’s speeches and anti-Soviet rhetoric as a serious indication of US goals; in the words of Gromyko, “I think to read Reagan and his team, they are trying to destroy us.”³⁷ Other high level Soviet officials also characterize the USSR as having “the most profound mistrust” of the US, particularly on security issues.³⁸

³⁵Information Memorandum, Hugh Montgomery to Secretary of State Alexander Haig, “INF: The Soviet Approach,” Nov. 20, 1981, CWIHP Document Reader Part III, The Euromissiles Crisis and the End of the Cold War: 1977-1987.

³⁶S. F. Akhromeev and G. M. Kornienko, *Glazami marshala i diplomata : kriticheskii vzgliad na vneshniu politiku SSSR do i posle 1985 goda* (Moscow, Russia: Mezhdunarodnye otnosheniia, 1992), 14.

³⁷The quote is recounted by another Soviet diplomat from his conversation with Gromyko in January 1984 Andrei S. Grachev, *Gorbachev’s gamble: Soviet foreign policy and the end of the Cold War* (Cambridge, UK: Polity Press, 2008), 21.

³⁸Aleksandr Yakovlev, interview with Don Oberdorfer, 1990, Don Oberdorfer Papers, Box 1, Folders 23.

On March 23, 1983 President Reagan delivered the Star Wars speech, announcing the US effort to create a missile defense shield. Soviet leaders saw Reagan's SDI proposal as a sign that the US administration wanted to speed up the arms race, regardless of whether SDI itself would be successful.³⁹ Following the SDI announcement and also Reagan's earlier March 8th "empire of evil" speech, Soviet views of the US became even harsher, as these statements by the US were seen as even more aggressive than what was already expected from Reagan.⁴⁰

Though it is not clear whether the Soviet Union fully understood how it was perceived from the Western point of view, the US was at least at a general level aware of Soviet perceptions. According to CIA assessments, the USSR saw the US as "hostile" and its policies as "threatening." (The belief was in contrast to Soviet views in the early 1970s, when the US was seen as easing tensions.) The Soviets "view their relationship with Washington as fundamentally competitive" and are particularly threatened by what they see as the Reagan administration seeking to increase costs of competition, increasing US defense efforts, asserting increased opposition to Soviet foreign policies, and exploiting Soviet security vulnerabilities.⁴¹

The USSR saw arms control specifically as a way through which the US would try to seek military advantages. Coming into the period of the 1980s, the Soviet leadership was operating from a strong baseline belief that, "through arms control talks, the United States sought to achieve unilateral advantage over the USSR and that the former nation's efforts, therefore, aimed to deceive the Soviet Side."⁴² The inspections and verification regimes that

³⁹Georgi Kornienko, Don Oberdorfer, Jan. 19, 1990, Don Oberdorfer Papers, Box 1, Folder 12.

⁴⁰Ibid.

⁴¹National Intelligence Council Strategic Evaluation Division, Office of Strategic Research, *Moscow and the Reagan Administration: Initial Assessments and Responses*, NIC M 81-10011, Sept. 1, 1981, CIA FOIA Electronic Reading Room.

⁴²Savelev and Detinov, see n. 8, 34.

the US was proposing would be used to, “discover the strengths, weaknesses, and vital characteristics of Soviet weapons.”⁴³ As a response to the US, the USSR sought to focus on maintaining its own strategic advantage. However, despite this belief, it appears that there was also a recognition among Soviet leadership that there would be long-term gains from mutual restraint, and there “existed a general conviction that the arms race had to be curbed and, regardless of other factors, relations with America had to be improved.”⁴⁴

Just as the US believed that the Soviets had demonstrated their high incentives to cheat on arms control, so the USSR was suspicious about US intentions as well. On the ABM treaty, the US appeared to be developing alternative interpretations as a way around the legal restrictions on developing and testing SDI components.⁴⁵ While the US was blaming the USSR for violating the ABM treaty by constructing the Krasnoyarsk radar, the Soviet Union saw the US as making an even more serious violation by planning to do research on missile defense.⁴⁶ While perhaps not technically cheating on the letter of the treaty, from the Soviet perspective the US was certainly trying to circumvent it.

4.3.3 Negotiations and expectations of Soviet rejection

The first period of INF negotiations provides a particularly useful observation of a “negative case” with no treaty signed because we can observe that treaties at both high and low levels of information exchange were considered and explicitly rejected by both sides. On one hand, the level of high monitoring proposed was essentially too costly to be accepted by both sides, while on the other hand a treaty proposed at a lower level of monitoring did not give enough protection from the high probability of cheating by the adversary.

⁴³Savelev and Detinov, see n. 8, 152.

⁴⁴Ibid., 35.

⁴⁵Victor Karpov, interview with Don Oberdorfer, Jan. 11, 1990, Don Oberdorfer Papers, Box 3, Folders 2-3.

⁴⁶Alexei Arbatov, Senior Scholar at the Carnegie Moscow Center, interview with the author, Moscow, Russian Federation, June 12, 2013.

Reagan gave the directive to conduct negotiations with the USSR on the INF treaty in 1981. The proposed deal would trade USSR dismantlement of the SS-20 and retirement of SS-4 and SS-5 for no US deployment of the Pershing II and GLCMs.⁴⁷ The so called “zero option” remained the core of the US position on the INF, and when it was again presented to the Soviets in 1982, an NSC directive also instructed for high-level policy working groups to start preparing a negative response to any Soviet reply that opposed the zero option.⁴⁸ The note on pre-planning a response, “on a close-hold basis,” suggested that officials strongly expected the USSR to reject the idea.

Negotiations were ongoing for several years in Geneva, but the two sides were in nearly complete disagreement on both the content and the monitoring terms of the treaty. The US for its part did not give any indication, even to its own allies, that it would be willing to alter its position.⁴⁹ Several former government officials interviewed for this project commented that the US and Soviet positions were so far apart in the early period of negotiations that the negotiations in Geneva were more for show than an actual negotiation. Recollecting the status of negotiations in 1983 when he took over as director of ACDA, Kenneth Adelman called the zero option “unnegotiable.”⁵⁰

During this first period, some US officials wanted a huge degree of access to Soviet information for the verification provisions, including the ability to verify non-deployed missiles and “inspect any suspicious-looking factory, warehouse, railway car, or rail-to-road transship-

⁴⁷National Security Decision Directive Number 15, “Theater Nuclear Forces (Intermediate-Range Nuclear Forces),” Nov. 16, 1981, Reagan Collection, CIA FOIA Electronic Reading Room.

⁴⁸National Security Decision Directive Number 56, “Private INF Exchange,” Sept. 15, 1982, CWHIP Document Reader Part III, The Euromissiles Crisis and the End of the Cold War: 1977-1987. Digital National Security Archive, Presidential Directives Collection.

⁴⁹National Security Council, “Talking Points for EVR’s Trip to European Capitals,” Jan. 12, 1982, Declassified Documents Reference System.

⁵⁰“Interview with Kenneth Adelman,” Sept. 30, 2003, Ronald Reagan Oral History Project, Miller Center of Public Affairs.

ment point, as well as launch sites.”⁵¹ However, there is no evidence of a specific proposal for information provisions being tabled at the negotiations during the first phase of negotiations, and participants do not remember seeing one. An NSC decision directive in September 1983 indicates that verification annexes should be prepared to support a proposed US draft treaty and tabled in Geneva in the next round of negotiations.⁵² This suggests however that such annexes had not been prepared previously.⁵³ Verification terms are complicated to develop and require extensive inter-agency debate and coordination even within the US. The lack of a real verification proposal suggests that US policymakers did not believe that they were at a position that the USSR would ever consider accepting, and did not want to invest resources in developing their own position.⁵⁴

In addition to the lack of preparation for serious negotiations on verification issues, there are several indicators from the intelligence community that the US did not expect the Soviets to accept an INF deal in the early 1980s, in part due specifically to the information

⁵¹The State Department at the time favored a more moderate stance, with less intrusive provisions, but they were for the most part out-manuevered in the inter-agency debates by Richard Perle and the DOD position. On US verification demands and inter-agency debate see: Talbott, see n. 32, 290.

⁵²National Security Decision Directive Number 104, “U.S. Approach to INF Negotiations – II,” Sept. 21, 1983, CWHIP Document Reader Part III, The Euromissiles Crisis and the End of the Cold War: 1977-1987, Digital National Security Archive, Presidential Directives Collection.

⁵³It appears that this proposal was never presented to the USSR. In his memoir, Shultz notes that in 1985 when preparing for renewed negotiations with the Soviets, he went back to build on the position that had been developed internally but not proposed in 1983. George P. Shultz, *Turmoil and Triumph: Diplomacy, Power, and the Victory of the American Ideal* (New York, NY: Charles Scribner’s Sons, 1993), 510-511. There are also some references to a US draft of an INF treaty, which was agreed to by all US internal agencies, ready to table at Geneva in late January 1982 but which the US did not propose because of other strains in the US-Soviet relationship at the time. There is no indication that this treaty draft included a verification proposal as well. Memo from Richard Burt and H. Allen Holmes to Secretary Haig, “Your Meeting with Paul Nitze January 25th at 4:00pm,” Briefing Memorandum, Jan. 23, 1982, US Department of State FOIA Virtual Reading Room.

⁵⁴Indeed, in the fall of 1984, comments made during NSPG meetings indicate that the US needed to revisit and further develop its INF position, which would not have been necessary if it already had one from just a few years earlier. National Security Planning Group Meeting 96, “Next-Steps in the Vienna Process,” Sept. 18, 1984, The Reagan Files. The real bulk of the work appears to have been done in 1987, with the NSC coordinating the difficult task of developing an inter-agency position on INF. Frank Carlucci, interview with Don Oberdorfer, Mar. 5, 1990, Don Oberdorfer Papers, Box 2, Folder 8.

provision demands. The CIA assessed in 1980 that the USSR was both unwilling to allow any intrusive verification measures in arms control agreements and likely to use specific agreements terms to give themselves a greater advantage over the West.⁵⁵ Then, following the end of the first period of negotiations, the CIA estimated that the USSR was not expecting any breakthroughs on INF. Importantly, the estimate noted that the Soviets would not be likely to pursue an agreement even if the US were to soften its position on some data exchanges because the USSR would not be willing to accept US proposals on verification.⁵⁶ This assessment suggests an awareness at the time that the USSR was not going to accept the proposals the US was making.

Finally, statements from interviews and memoirs of senior policymakers also indicate that the US position was known to be a maximal one; it would be a big win if the Soviets accepted, but unsurprising and not a big risk if they did not and the US were instead to continue with its own missile deployments. Former ACDA director Kenneth Adelman recounted that, “the United States didn’t need a treaty... I never thought we’d get an INF treaty.”⁵⁷ Similarly, in later recalling the early zero option proposal, former US Ambassador to Russia Jack Matlock wrote, “Those who designed the zero/zero proposal knew very well that the Soviet leaders at the time were unlikely to accept it.”⁵⁸ Former officials commenting on arms control negotiations speculated that some Reagan administration, particularly those in the Department of Defense, like Richard Perle, tended to support negotiation positions

⁵⁵This CIA makes this kind of assessment specifically regarding conventional arms limitations in Europe. For example, CBMs are seen by the USSR as a tool to inhibit NATO’s training flexibility. Central Intelligence Agency National Foreign Assessment Center, *Soviet Attitudes toward Confidence-Building Measures in European Arms Control*, Apr. 9, 1980, CWIHP Document Reader Part III, The Euromissiles Crisis and the End of the Cold War: 1977-1987, CIA FOIA Electronic Reading Room.

⁵⁶Central Intelligence Agency Directorate of Intelligence, “Soviet Interest in Arms Control Negotiations in 1984,” DI Memo, Mar. 23, 1984, Reagan Collection, CIA FOIA Electronic Reading Room.

⁵⁷See n. 50.

⁵⁸Matlock, see n. 1, 40.

because they knew that these proposals would be rejected by the Soviets.⁵⁹ George Shultz recounts that during this time Caspar Weinberger and Bill Casey “wanted no dealings with the Soviets” and did not want to change the negotiation positions already laid down.⁶⁰ Keeping the maximal position essentially secured the preferred no treaty outcome for those who believed that the USSR would try to take advantage of any cooperation.⁶¹

Agreement failure: The Walk in the Woods Proposal

Although expectations for a treaty were low from both policymakers and the intelligence community, negotiations continued in Geneva. According to former negotiators working on the INF during this first period of negotiations, various back and forth proposals made during this time were largely to bolster public opinion, as both sides wanted to at least publicly show that they were serious about negotiations. Neither side made any real compromises, and as discussed above, the US made only general proposals with the expectation that they would be rejected. The only serious and possibly viable measure during this period was the so-called “Walk in the Woods” proposal.⁶² That this possible treaty form was ultimately rejected by both sides demonstrates that given the beliefs during this period, the no treaty outcome was preferable both to costly verification and to interim solutions like the “walk in the woods” with lower information exchange levels.

In July 1982 the lead INF negotiators – Paul Nitze on the US side and Kvitinsky on the Soviet – stepped away from the negotiating rooms, went for a walk, and discussed their

⁵⁹John Poindexter, interview with Don Oberdorfer, Nov. 1, 1990, Don Oberdorfer Papers, Box 2, Folder 24.

⁶⁰Shultz, *Turmoil and Triumph: Diplomacy, Power, and the Victory of the American Ideal*, see n. 53, 490.

⁶¹The USSR likely also saw US proposals as ones that neither side expected to be accepted in an agreement. In a private meeting in January 1984, Gromyko explicitly told Shultz that the Soviet side believed that the US was making the kinds of arms control proposals as would lead to no agreement between the two sides. Memorandum of Conversation, “Meeting between Secretary Shultz and Soviet Foreign Minister Gromyko,” Jan. 18, 1984, CWIHP Document Reader Part IV, The Euromissiles Crisis and the End of the Cold War: 1977-1987.

⁶²Jones, see n. 21, 64.

own bold idea for an agreement.⁶³ The proposal called for a set level of INF missiles from both sides to remain in Europe, which would mean a limited US cruise missile deployment, no Pershing II missiles, and a reduction of Soviet missiles previously deployed. Neither Nitze nor Kvitinsky had cleared the proposal with their home governments, and so in a somewhat unique situation, each had to convince their own leaders to accept it. The Walk in the Woods proposal suggested significant changes in the US (and Soviet) positions, most significantly in allowing both to maintain some intermediate missiles in Europe.

The proposal was not rejected outright by the Reagan administration and was seriously evaluated and discussed at the NSC level. The package was seen by NSC staff as something that would reduce the threat from Soviet SS-20 missiles to some extent, but not preferable to a zero option.⁶⁴ In addition to concerns about the terms of reductions, the Nitze proposal was not clear about verification, and detailed verification was not part of the package. This shortcoming was noted in a document summarizing the proposal for President Reagan.⁶⁵ On the Soviet side, the proposal was also carefully reviewed at the senior decision making level and likewise met with heavy skepticism. The terms –leaving some US missiles deployed in Europe – were problematic and went against prior Soviet positions.⁶⁶

Ultimately, the Walk in the Woods proposal was not rejected just because of inadequate verification provisions, but that was one factor that made it an untenable proposal. The proposal was also not rejected only on the basis of the terms it set for missile reductions.

⁶³For a detailed account of the meeting see chapter 6 in Talbott, see n. 32.

⁶⁴Memorandum for the President, “INF Initiative,” Aug. 5, 1982, Declassified Documents Reference System.

⁶⁵Arms Control and Disarmament Agency Memorandum For the President, “The INF Package,” July 30, 1982, The Reagan Files, Ronald Reagan Presidential Library, WHORM: Clark, William Patrick: Files, 1982-1983, BOX 3, [File Folder: Intermediate-Range Nuclear Forces (INF): Nitze Meeting “Walk in the Woods” -07/29/1982-07/31/1982]).

⁶⁶Savelev and Detinov, see n. 8, 65. Notably, the full background of why the USSR rejected the Walk in the Wood proposal remained unclear to even former Soviet officials with close access; in what was recognized by scholars as one of the best accounts of Soviet decision making on arms control, the authors write, “For whatever reasons, neither government embraced the proposal.” *ibid.*, 66–67.

In fact, the US began to propose an option for reduction that was very similar to the Walk in the Woods terms just about a year later. The Presidential Directive to INF negotiators in March 1983 continued to set the “zero option” as a top goal, but authorized negotiators to suggest that the US would be willing to pursue an interim agreement which would leave some limited equal number of Soviet and American intermediate missiles in Europe.⁶⁷

In addition to rejecting the walk in the woods proposal, the USSR, as expected, had also quickly rejected the US idea of a “zero option” for intermediate missiles; in a letter to German Chancellor Helmut Schmidt, Brezhnev called the idea “a mockery of reason... a primitive method that does not speak to the seriousness of the U.S. negotiating strategy” and “inacceptable to the Soviet Union from the onset.”⁶⁸ At the same time, the US rejected Soviet proposals, which accepted reductions of Soviet INF missiles in exchange for no deployments by the US and called for verification through data exchanges and national technical means only.

Many US leaders at the time believed that the USSR would not accept an agreement because they were not sufficiently threatened. Some on the US side argued that the USSR needed to see the reality of Pershing deployments before they would be ready to negotiate an arms control agreement. US Secretary of Defense Casper Weinberger held this view, as is clear in NSC meeting minutes⁶⁹ and a similar argument is noted in some intelligence assessments as well.⁷⁰ President Reagan himself possibly also believed that the display of

⁶⁷National Security Decision Directive Number 86, “U.S. Approach to INF Negotiations,” Feb. 28, 1983, CWHIP Document Reader Part III, The Euromissiles Crisis and the End of the Cold War: 1977-1987, Digital National Security Archive, Presidential Directives Collection.

⁶⁸“Letter from Leonid Brezhnev to Willy Brandt,” Translation from Russian, Feb. 22, 1982, CWHIP Document Reader Part III, The Euromissiles Crisis and the End of the Cold War: 1977-1987.

⁶⁹National Security Planning Group Meeting 50, “Arms Control/INF,” Jan. 13, 1983, The Reagan Files: National Security Council and National Security Planning Group Meetings.

⁷⁰National Security Planning Group Meeting 59, “INF Negotiations; Next Steps in the Israeli-Lebanon Negotiations,” Mar. 17, 1983, The Reagan Files: National Security Council and National Security Planning Group Meetings; Information Memorandum, Hugh Montgomery to Secretary of State Alexander Haig, see n. 35, 2.

the deployment was necessary to convince the Soviets. He wrote in his diary on May 12, 1983: “Like me [Nitze] believes the Soviets won’t move [on INF] until & unless we display our intermediate missiles in Europe.”⁷¹

However, new evidence from the Soviet side suggests that this was not the case. Records of internal Politburo discussions reveal that key Soviet leaders, such as Andropov, Gromyko and Grishin, believed that Reagan sought to deploy the Pershing in Europe at any cost and that Soviet publicity efforts could only reveal America’s “antisoviet, militaristic intentions” rather than change Reagan’s behavior.⁷² The USSR appears to have been quite convinced of the upcoming deployment in 1983 and prior, the Politburo decided to do the walkout from negotiations months before the deployment,⁷³ and there is little evidence to suggest that they hoped to avoid this eventually through other means. Andropov referred to the “inevitable grave consequences” of US deployments in December 1982, and the USSR started an official public campaign justifying a Soviet response to this threat a year before the deployments and walk-out.⁷⁴ However, this fear of a security threat did not motivate the USSR to actively pursue an agreement on INF limitations during the first negotiations period.

⁷¹Ronald Reagan, “Thursday, May 12 1983,” in *The Reagan Diaries*, ed. Douglas Brinkley (Harper Collins, 2007).

⁷²“Session of Politburo of CC CPSU, TsKhSD,” May 31, 1983, TsKhSD, F.89 Op. 42, D.53, Li 1-14, Translated and published in CWIHP Bulletin No. 4, Fall 1994.

⁷³Savelev and Detinov, see n. 8, 67.

⁷⁴*ibid.*, 77. The USSR engaged in a campaign to try to sway European governments and public opinion in Europe against the deployments, which is sometimes cited as a Soviet effort to prevent the deployments. However, the Politburo discussions suggest that these efforts were primarily seen as a way to foster anti-American feelings in Europe rather than as a tool to alter US planning. Another notable data point comes from the memoir of Georgy Kornienko, first deputy Foreign Minister during the early 1980s. Kornienko recounts that there may have been a moment to negotiate limits and prevent the Pershing deployment prior to the NATO decision, in 1979, and refers to this as the most important missed opportunity on the Pershing issue. He also states that then Defense Minister Ustinov also later privately acknowledged that an opportunity to prevent the Pershing deployments had been missed at that earlier point. Kornienko’s account suggests that he did not see any similar opportunities to prevent the deployment once the NATO decision to do so was made. Akhromeev and Kornienko, see n. 36, 44–45.

The evidence on beliefs and agreement outcomes from first period of negotiations are consistent with my theory predictions. Under conditions where both sides strongly believed their opponent would try cheat or use arms control to gain an advantage, no treaty outcome was likely. The US proposed treaties with information exchange provisions so intrusive that it largely expected the USSR to reject them. A treaty form with less intrusive provisions was also rejected by both sides, suggesting that a no treaty outcome was seen as preferable to a low monitoring type of agreement. The evidence also shows that alternative theories leave questions as to why a treaty was so far out of reach during this period. The USSR was already experiencing economic strain and was clearly threatened by the upcoming US growth in missile capabilities. But this decline in relative power was not sufficient in creating the opportunity for a negotiated bargain. Additionally, experience with arms control seems to have socialized the US and Russia into a process of conducting negotiations, but not necessarily into concluding certain kinds of bargains. Both sides seemed interested in letting INF negotiations go on for public relations reasons, while making little progress in reconciling their maximalist positions.

4.4 Domestic Political Volatility in the USSR

Mikhail Gorbachev became the General Secretary of the USSR in March 1985. The leadership transition affected US beliefs about Soviet incentives for cooperation on an arms control agreement. US perceptions went from a strong belief that the USSR had high incentives to take advantage of cooperation to beliefs characterized by increased uncertainty about Soviet intentions, with a new, though limited, possibility that Soviet intentions had changed. Importantly, it is not simply the case that US perceptions about the Soviet Union changed for the better; the USSR was not seen as suddenly less likely to cheat on arms control or less

likely to pursue competitive security policies vis-a-vis the US. Gorbachev did look like a different kind of Soviet leader with new youth and vigor, and he did replace key foreign policy leadership positions, but this difference itself did not necessarily mean a policy change. This section discusses the key domestic political changes in the USSR, and identifies how these were perceived and interpreted by US policymakers.

Unsurprisingly, the US was very interested in Soviet leadership transitions at a very high level throughout both periods of INF negotiations. For example, in 1981 CIA Director William J. Casey requested an analysis of how previous Soviet leaders had come to power, and how rising leaders get support from key elements of the Soviet power structure including the army, KGB and Politburo.⁷⁵ Casey's short request suggests a clear awareness among US policymakers that Soviet leaders were not independent forces but rather part of broader structure that was critical for their coming to power. In the early 1980s, the intelligence community hesitated to make strong predictions about what policy directions a new Soviet leader would bring.⁷⁶ The hesitation extended directly to arms control, with at least some intuition hedging on the side of a possible hardening of policy: "Soviet arms control policy in the post-Brezhnev political succession in the USSR is less certain. During a leadership succession period the Soviet stand on arms control policy may harden, because no power contender would want to appear less defense-minded than another."⁷⁷ As Gorbachev came to power, a number of surface level characteristics set him apart from prior Soviet leaders – most notably his age and energetic manner. There was a clear effort in both the intelli-

⁷⁵Director of Central Intelligence, "Memorandum from William J. Casey on Succession in USSR (DCI Memo to NIC Chairman)," Sept. 18, 1981, Reagan Collection, CIA FOIA Electronic Reading Room.

⁷⁶One assessment suggests the general difficulty of predicting policy changes in the USSR by noting the failure to predict the policy approaches of prior new leaders; Stalin had appeared moderate in the early stages of his succession to Lenin, while Khrushchev was at first a hardliner before pursuing a moderate course. Central Intelligence Agency, "The Soviet Challenge: The Determinants of Soviet Behavior," Paper, see n. 17, 14.

⁷⁷Director of Central Intelligence, *Soviet Potential to Respond to US Strategic Force Improvements, and Foreign Reactions*, SNIE 11-4/2-81, see n. 33, 27.

gence community and among policymakers themselves to try and better understand what his leadership would actually mean for cooperation or competition.

Uncertainty stemming from Gorbachev's leadership transition can be observed in two sources of historical evidence, both dating from the time that these shifts were happening rather than later assessments. First, intelligence estimates were prepared frequently during this period and often explicitly evaluated the likelihood of different outcomes, including whether the USSR would pursue changes vs. continuity in foreign policy. An evaluation of these documents – more of which have become recently declassified – reveals that the intelligence community was quite hesitant to make strong predictions about Gorbachev, and while noting the possibilities for policy change also highlighted political factors that contributed to continuity. The uncertainty is apparent in the mixed language of numerous intelligence estimates. Second, many senior officials have written about their impressions of both Gorbachev and senior foreign policy leaders. These accounts by the very people who made the key design decisions on INF provide an important measure of beliefs and changes in beliefs about Soviet security interests.

4.4.1 Gorbachev the new leader

Today, most scholars see Gorbachev as the leader who brought in new thinking, new openness in the Soviet system and heralded what would become a complete transformation of the USSR. However, from a retrospective analysis, it is easy to overlook just how much skepticism and uncertainty there was about Gorbachev at the time when he assumed leadership. Gorbachev was a new leader after many years of political stability in the USSR, and that change itself was a key part of US perceptions that changes in policy might be possible. It was far from clear however whether Gorbachev's policy would be more cooperative with the West or more of the same Soviet hardliner positions.

The intelligence community assessed Gorbachev's possible impact on Soviet security

policy specifically, and the evidence from these documents demonstrates that the increased uncertainty applied directly to beliefs about Soviet incentives on arms control cooperation and competition. First, Soviet policy was not seen as having made a sharp turn towards valuing cooperation. Although Gorbachev likely wanted a new detente on the international affairs front to give him breathing room to implement new domestic policies, a 1985 National Intelligence Estimate noted that “the Soviets do not appear to be willing to pay any price for this detente that entails altering their own behavior and goals on security issues of importance to the United States... Gorbachev wants his breathing space on the cheap.”⁷⁸ On INF specifically, a CIA memo (which was passed on directly to President Reagan in June 1985) noted that some of the visible changes Gorbachev was promoting, such as a moratorium on Soviet missile deployments, were “stable leftovers from his predecessor.”⁷⁹

Second, while predicting that policy would not be likely to change, intelligence estimates also raised the possibility of Soviet efforts at engagement, and indicated uncertainty about Soviet intentions by noting that these moves could be interpreted as either genuine or as attempts to take advantage of the West: “General Secretary Gorbachev’s accession to power will not suddenly transform Soviet arms control policies. ... Soviet hints of ‘new lines’ on arms control and East-West relations may emerge during the next few months. They could be genuine probes for areas of agreement, but they are more likely in the near term to represent tactical efforts to play on disagreements in the West.”⁸⁰

An intelligence estimate prepared right before the October 1986 Reykjavik Summit

⁷⁸Director of Central Intelligence National Intelligence Estimate, *Domestic Stresses on the Soviet System*, NIE 11-18-85, Nov. 18, 1985, CIA FOIA Electronic Reading Room.

⁷⁹Central Intelligence Agency Directorate of Intelligence, “Gorbachev, The New Broom,” June 27, 1985, CIA FOIA Electronic Reading Room. Some US officials also saw the Soviet moratorium offer as an attempt by Gorbachev to freeze a 10 to 1 INF missile advantage in favor of the USSR, as the US had at that point only deployed part of its missiles Matlock, see n. 1, 116.

⁸⁰Director of Central Intelligence Special National Intelligence Estimate, *Soviet Strategic and Political Objectives in Arms Control in 1985*, SNIE 11-16-85/L, Nov. 16, 1985, CIA FOIA Electronic Reading Room.

is perhaps one of the clearest examples of US beliefs as being characterized by a mixture of skepticism about change in arms control policy and an awareness that new Soviet flexibility may be possible:

On arms control, Soviet tactics may or may not be intended to confuse the United States and its Allies.... Moreover, we do not believe that Gorbachev or any Soviet authority genuinely regards the elimination of nuclear weapons as an operational objective or a real Possibility within any foreseeable time frame... In part because he does not expect the United States to satisfy him on essential elements of his current positions and proposals, Gorbachev does not expect or intend to follow through materially on any of them and has communicated this into the Soviet bureaucracy... He himself, however, could be willing to be more flexible on fundamental security issues if the United States and other partners create the right atmosphere through marginal concessions that help him sell further Soviet movement to his reluctant colleagues.⁸¹

The assessment was uncertain on Soviet arms control tactics, mixed on Gorbachev, and highly skeptical of the USSR's true intentions.

It was not just the intelligence community that was skeptical of Gorbachev, but most of the US senior political leadership as well, including President Reagan. In April 1985, a month after Gorbachev had assumed power, the US Ambassador to the USSR updated President Reagan on his thoughts of the new leader. Reagan wrote in his diary, "[Art Hartman] confirms what I believe that Gorbachev will be as tough as any of their leaders. If he wasn't a confirmed ideologue he never would have been chosen by the Polit bureau

⁸¹Director of Central Intelligence, *Gorbachev's Policy Toward the United States, 1986-88*, SNIE 11-9-86W, see n. 28 Interestingly, a handwritten note for the President on the cover of the estimate points out that the estimate was prepared before the Reykjavik Summit, suggesting that views of senior officials and the President were likely altered by the meeting with Gorbachev.

[Politburo].”⁸² Although some advisers were suggesting that Gorbachev was a “different type” than past Soviet leaders, Reagan wrote in June 1985: “I am too cynical to believe that.”⁸³ Following the Geneva Summit, Reagan appeared to have started changing his mind about Gorbachev, but slowly. In June 1986 he noted, “I am not going to form a quick opinion but [Gorbachev] sure is different from the old timers I’ve met.” Ronald Reagan. “Monday June 23, 1986.” In *The Reagan Diaries*, ed. Douglas Brinkley. Harper Collins, 2007

It was not clear that Gorbachev was bringing any real policy change, and some officials on the National Security Council advised that in proposing new negotiations on arms control, the Soviet Union was simply up to their usual tricks. They were seeking to gain some publicity advantages while not really changing their ultimate desires to overcome western capitalism. Casper Weinberger, the Secretary of Defense, consistently believed that there was no benefit in negotiating with the USSR, and that all Soviet moves towards compromise were actually ways to entrap the US. His views did not change with Gorbachev, and in his memoir he clearly articulated his belief that Gorbachev could not be trusted to become more like the US on economic values, to not violate arms control agreements, or to suddenly oppose his own communist party’s anti-Western principles.⁸⁴ Richard Perle, who represented the defense department in Reagan-Gorbachev summits, noted that at least for the first few years they saw Gorbachev as having the same policies on security issues as Brezhnev.⁸⁵

George Shultz first met Gorbachev in Moscow following Chernenko’s funeral, and his first impressions were characterized by some optimism but also considerable uncertainty. Recounting his impressions in his memoir, Shultz wrote, “[Gorbachev] displayed a breadth

⁸²Ronald Reagan, “Friday, April 19 1985,” in *The Reagan Diaries*, ed. Douglas Brinkley (Harper Collins, 2007).

⁸³Ronald Reagan, “Monday, June 24 1985,” in *The Reagan Diaries*, ed. Douglas Brinkley (Harper Collins, 2007).

⁸⁴Casper Weinberger, *Fighting for Peace: Seven Critical Years in the Pentagon* (New York, NY: Warner Books, 1990), 331.

⁸⁵Richard Perle, interview with Don Oberdorfer, Apr. 12, 1990, Don Oberdorfer Papers, Box 2, Folder 24.

of view and vigor, I thought, but his basic positions were ones we had heard before....'In Gorbachev we have an entirely different kind of leader in the Soviet Union than we have experienced before,' I told Vice President Bush and others in our party. He was quicker, fresher, more engaging, and more wide ranging in his interests in knowledge. The content of our meeting was tough and his manner was aggressive, but the spirit was different." But, while it was clear for Shultz that Gorbachev was a different kind of person from previous Soviet leaders, he also cautioned his colleagues, "But the U.S. -Soviet relationship is not just about personalities."⁸⁶ Some US policy maker saw Gorbachev in an even harsher light, even well into Gorbachev's second year. Shultz recounts one such opinion from May 1986: "Robert Gates, most prominent among the CIA analysts, said nothing had happened or could happen, that Gorbachev was just another in the succession of hide-bound Soviet leaders."⁸⁷

Despite the skepticism from the intelligence community and many policymakers, there was also a belief that security policy change in the USSR was possible. After first meeting Gorbachev in December 1984 shortly before he assumed leadership, UK Prime Minister Margaret Thatcher famously declared, "I like Mr. Gorbachev. We can do business together."⁸⁸ Thatcher then traveled to Camp David, where her views made a big impression on President Reagan.⁸⁹ Referring to the period when Gorbachev first came to power, Bud McFarlane recounted that it was to Reagan's credit that he was open to engaging with Gorbachev to see if there was real change, because at the time, "none of us really knew anything about

⁸⁶Shultz, *Turmoil and Triumph: Diplomacy, Power, and the Victory of the American Ideal*, see n. 53, 530, 532-533.

⁸⁷*ibid.*, 710. This view was held by a number of influential former US government leaders as well, including Nixon and Kissinger, who argued in April 1987 that while Gorbachev might be making steps towards change at home, on foreign policy he was just like any other Soviet leader who came before him, operating with the same assumptions and goals. James Mann, *The Rebellion of Ronald Reagan: A History of the End of the Cold War* (London, UK: Penguin Books, 2010), 235.

⁸⁸"Margaret Thatcher TV Interview for BBC ('I like Mr Gorbachev. We can do business together')," Dec. 17, 1984, Thatcher Archive: COI transcript, Margaret Thatcher Foundation.

⁸⁹"Interview with James Kuhn," Mar. 7, 2003, Ronald Reagan Oral History Project, Miller Center of Public Affairs, University of Virginia.

[Gorbachev] ... but it was his youth relatively and the new generational differences that suggested the possibility of change.”⁹⁰ While there was debate as to whether the new Soviet leader was a “good thing or a bad thing for the West,” there were officials with less hesitation as well, who saw the opening for engagement as now up to the US to take on.⁹¹

The sense of possible change applied directly to arms control. In memos for the President’s first meeting with Shevardnadze in July 1985, Michael Armacost noted that there had been a “number of intriguing hints of a change in the Soviet position [on arms control]” and suggested that the US might move fast to better understand “how serious the Soviets are.”⁹² At the same time, the head of INR advised Secretary Shultz that Gorbachev was making arms control a priority, and that “there is at least some possibility that Gorbachev may have in mind a ‘fast track’ on arms control.” Shortly after, in September 1985, the USSR made proposals on strategic arms control that Shultz saw as new and radical, but clearly an attempt to push for a Soviet advantage. The implication here was that it was clear to Shultz that Gorbachev was “ready to make radical changes” in the traditional Soviet arms control approach, but also that he was not someone who was about to compromise on Soviet security interests.⁹³

Initial Soviet moves at engagement were met with hesitation but also some optimism. In summer 1985 US officials on the one hand expected newly appointed Soviet Foreign Minister Eduard Shevardnadze to come on his first Washington visit with an arms control proposal that was largely for show. At the same time, the CIA suggested that the USSR might have

⁹⁰Bud McFarlane, interview with Don Oberdorfer, Oct. 9, 1989, Don Oberdorfer Papers, Box 2, Folder 22.

⁹¹Author Don Oberdorfer quotes Vice President George Bush’s optimistic impression that with Gorbachev, the USSR was coming out of past troubles, and that “It’s up to us meet the challenge.” Oberdorfer, see n. 15, 111.

⁹²US Department of State Under Secretary of State for Political Affairs Michael Armacost, “Memorandum for the President: Your Meeting with Foreign Minister Shevardnadze,” July 22, 1985, Understanding the End of the Cold War Reagan/Gorbachev Years, An Oral History Conference (documents collections), Brown University.

⁹³Shultz, *Turmoil and Triumph: Diplomacy, Power, and the Victory of the American Ideal*, see n. 53, 577.

a serious interest in arms control because of economic strain, failures in Afghanistan, and Gorbachev's interest in focusing on a domestic agenda.⁹⁴

4.4.2 New Cabinet, new staff and maybe new policies

It was known at the time and has since been more clearly revealed that Soviet policy was not simply a decision of the General Secretary. The Politburo was involved in all decisions, and the Defense Council was also involved in foreign policy. Even if Gorbachev himself had new ideas about where Soviet security policy should head, it is likely that he would not have been able to implement those changes without the support of other senior Soviet leaders. Placing his close allies in leadership positions was a key way in which Gorbachev made his domestic and foreign policy innovations possible. However, Gorbachev began to shake up the leadership structure more quickly than expected.

He moved allies into positions that neutralized a highly influential military industrial complex, which pushed in favor of greater arms buildup as well as quickly shifting foreign policy and arms control negotiations with the US. The changes were also more pervasive than those of his predecessors. Gorbachev's changes continued through 1985 and well into his second year. In early 1986, one of Gorbachev's closest foreign policy advisors, Anatoly Chernyaev (who himself had been a very important and strategic appointment), wrote in his diary that the changes in cadres were "sweeping" and that at "every Secretariat and Politburo meeting several people are fired."⁹⁵ In the foreign policy sphere, by spring 1987, Gorbachev had replaced seven out of nine deputies in the Foreign Ministry and 68 out of 115 Soviet ambassadors overseas.⁹⁶ As discussed in the next section, the personnel changes made

⁹⁴National Security Council Meeting 121, "Visit of Soviet Foreign Minister Shevardnadze," Sept. 20, 1985, The Reagan Files.

⁹⁵Anatoly S Chernyaev, *My Six Years with Gorbachev* (University Park, PA: Pennsylvania State University Press, 2012).

⁹⁶Oberdorfer, see n. 15, 164.

it more likely that the USSR would be able to accept an agreement in the second period of negotiations. However, the domestic political shifts also affected how the US perceived Soviet intentions on arms control. Observing the personnel changes as indicators of possible changes in Soviet foreign policy, the US became more willing to negotiate an INF deal that the USSR would be able to accept.

Before considering Gorbachev's appointments, it is important to consider a key Politburo change that occurred right before Gorbachev came to power, and which had significant independent effects on both US perceptions of the USSR and Gorbachev's ability to later pursue his foreign policy agenda. Dimitry Ustinov, the USSR's long-serving Defense Minister died suddenly in December 1984. His death occurred before Gorbachev was in the position of General Secretary to appoint a replacement, but the one who became defense minister, Sergei Sokolov, was not only somewhat more moderate than Ustinov, but also far less influential. In recent interviews, several Russian experts and former government officials noted that Gorbachev essentially "got lucky" that Ustinov died – with Ustinov as defense minister most of Gorbachev's attempts to reorient arms control policy would have met with very strong and possibly insurmountable opposition.⁹⁷ Ustinov was known to have an anti-American mentality and his control over the military-industrial complex made him hugely influential in Soviet security policy.⁹⁸ Ustinov's stature in the Politburo and direct access to Brezhnev meant that nearly all demands by the military were accepted without question,

⁹⁷Victor Yesin, Retired Colonel-General (retired), Former Chief of Staff of the Russian Strategic Rocket Forces, interview with the author, Moscow, Russian Federation, June 5, 2013.

⁹⁸Alexander G. Saveliev, Head of the Strategic Studies Department, Center for International Security, Institute of World Economy and International Relations (IMEMO), interview with the author, Moscow, Russian Federation, June 6, 2013. The Ministry of Defense played a central role in the Big Five, a decision making body that handled arms control issues. The Big Five was made of representatives from: the Committee of the Communist Party, the Ministry of Defense, the Ministry of Foreign Affairs, the Military Industrial Commission and the KGB. Saveliev and Detinov, see n. 8, 53, 64. Gorbachev later maneuvered a close ally, Lev Zaykov, into position to lead the Big Five group. By 1986, the Big Five and associated high level groups consisted of many supporters of Gorbachev's agenda, including Shevardnadze, Yakovlev, and Akhromeyev, who would also play key roles in direct negotiations with the US. *ibid.*, 113-114.

and without consideration of cost or even how moves would be interpreted by the US.⁹⁹

In the US, Ustinov's death was seen as a key factor for allowing possible future changes in the Soviet position. Ustinov had been central in ensuring that the "military's interests are protected" during periods of political flux.¹⁰⁰ Ustinov's obituary in the New York times noted that he had routinely accused the US of seeking military superiority and aggravating the strategic balance, and had overseen the expansion of the Soviet military-industrial complex.¹⁰¹ Ustinov's death was recognized in the US as having significant impact for arms control, but the direction of that impact was actually unclear. While some assessments suggested that Soviet policy would be more flexible and conciliatory without Ustinov, other assessments suggested that Soviet policy would be difficult to change without a person like Ustinov to work on "integrating the interests and perspectives of the military and the political leaderships."¹⁰²

The first indicators that Gorbachev was making major changes in foreign policy leadership positions began in summer 1985. At a non-governmental conference, a senior Soviet official mentioned to a State Department official that the Soviet foreign policy team was about to change. The information was passed up to Jack Matlock who then advised Deputy National Security Advisor John Poindexter that long-serving Soviet Foreign Minister Gromyko would be leaving.¹⁰³ Indeed, about a week later on July 3, 1985, Gorbachev moved Foreign Minister Gromyko to a prestigious but far less influential post and appointed Eduard Shevardnadze as his new Foreign Minister. Gromyko had served as Foreign Minister since 1957

⁹⁹Grachev, see n. 37, 16.

¹⁰⁰Central Intelligence Agency Special Analysis, "USSR: Institutional Factors in the Succession," May 3, 1982, Reagan Collection, CIA FOIA Electronic Reading Room.

¹⁰¹Eric Pace, "Ustinov had key roles in military and politics." *The New York Times*, December 22, 1984.

¹⁰²Director of Central Intelligence, *Soviet Strategic and Political Objectives in Arms Control in 1985*, SNIE 11-16-85/L, see n. 80.

¹⁰³James Graham Wilson, *The Triumph of Improvisation: Gorbachev's Adaptability, Reagan's Engagement, and the End of the Cold War* (Ithaca, NY: Cornell University Press, 2013), 93.

and had formed a close alliance with Ustinov in supporting military programs. He had been one of those responsible for the decision to deploy the Soviet SS-20 missiles, justifying it at the time as necessary to keep up with the US.¹⁰⁴ In the West, Gromyko had a widely used nickname: “Mr. Nyet,” (Mr. No).

In contrast to his predecessor, Shevardnadze was a party leader from Georgia, an outsider with no foreign policy experience but a politician whom Gorbachev knew and trusted.¹⁰⁵ There was no support for his appointment at the Foreign Ministry, and great surprise at Gorbachev’s choice.¹⁰⁶ In his new position at the head of the Foreign Ministry and as a full member of the Politburo, Shevardnadze was in a position to support Gorbachev’s foreign policy both internationally and during internal debates.¹⁰⁷ Shevardnadze appointment was not only an effort by Gorbachev to consolidate power with his supporters at home, but also an effort to signal to Western observers that a policy change was happening. In spring 1985, Chernyaev wrote with concern in his diary that the West was seeing that the “Gromyko era in foreign policy still hasn’t ended.”¹⁰⁸ By summer of that year, Gorbachev was trying to show that it had.

Although the US expected some change in USSR, the extent of the leadership turnover was a surprise. Following Gorbachev becoming the general secretary, the US expected that he would be surrounded by others who did not support pursuing security solutions through cooperation with the US, and that these people would be difficult to change: “The current Soviet leadership constellation will not suddenly be transformed. We believe Soviet leaders

¹⁰⁴Grachev, see n. 37, 18-19.

¹⁰⁵Archie Brown, *The Gorbachev Factor* (New York: Oxford University Press, 1996), 215.

¹⁰⁶Pavel Palazhchenko, *My Years with Gorbachev and Shevardnadze: The Memoir of a Soviet Interpreter* (University Park, PA: Pennsylvania State University Press, 1997), 30. Chernyaev, *My Six Years with Gorbachev*, see n. 95, 35.

¹⁰⁷Brown, see n. 105, 108.

¹⁰⁸Chernyaev, *My Six Years with Gorbachev*, see n. 95, 32.

may have somewhat different perspectives about how best to hedge against an intensified arms competition, but are in general agreement that little can be expected from this phase of the arms control dialogue with the West.”¹⁰⁹

To what extent did US leader observe the cabinet changes in the USSR as signs of possible policy shifts? For at least several years, the effects of new people in power were seen as possibilities rather than assurances or clear indicators of policy change. Shevardnadze and Shultz met for the first time at a ministerial meeting on July 31, 1985. Shultz observed a number of differences between Shevardnadze and his predecessor – Shevardnadze was more direct, more willing to use technology, and had a different tone. But, at the same time, Shevardnadze’s positions on the key issues – including US missiles in Europe – were at the time exactly what they had been under Gromyko.¹¹⁰ Shultz recounted his first impressions: “Overall, the substance of the Soviet position was unchanged. But I was stuck by Shevardnadze’s tone: it was far less polemical.”¹¹¹

In general, the US intelligence spent considerable time tracking Soviet leadership dynamics, and assessments focused on the alignment of senior leadership with Gorbachev, against him, or as independent forces in the Politburo.¹¹² Although the US expected some changes in USSR, the extent of the leadership turnover was a surprise. US intelligence expected that Gorbachev would be surrounded by others who did not support pursuing security solutions through cooperation with the US, and that these people would be difficult to change: “The current Soviet leadership constellation will not suddenly be transformed. We believe Soviet leaders may have somewhat different perspectives about how best to

¹⁰⁹Director of Central Intelligence, *Soviet Strategic and Political Objectives in Arms Control in 1985*, SNIE 11-16-85/L, see n. 80.

¹¹⁰Wilson, see n. 103, 94.

¹¹¹Shultz, *Turmoil and Triumph: Diplomacy, Power, and the Victory of the American Ideal*, see n. 53, 574.

¹¹²Central Intelligence Agency Directorate of Intelligence, “The 27th CPSU Congress: Gorbachev’s Unfinished Business,” Apr. 1, 1986, CIA FOIA Electronic Reading Room.

hedge against an intensified arms competition, but are in general agreement that little can be expected from this phase of the arms control dialogue with the West.”¹¹³ As the changes began to happen quickly, CIA intelligence estimates noted Gorbachev’s promotions of key advisers who would come to play a key role in arms control negotiations, including Yevgeniu Velikov, Anatoliy Chernyaev.¹¹⁴

Gorbachev made a number of appointments which would be too extensive to detail here, but one more is important to note because of his role in arms control.¹¹⁵ US intelligence also observed the appointment of Marshal Sergey Akhromeyev as chief of the general staff, but came to the wrong conclusion about what this indicated. Rather than preserving the military’s “considerable influence in Soviet arms control decision making,”¹¹⁶ Akhromeyev turned out to be one of the most forthcoming and pragmatic members of the Soviet arms control negotiating team. None of the senior US policymakers had met Akhromeyev prior to their arrival at the 1986 Reykjavik summit, and multiple personal accounts are filled with surprise about his personality and negotiating approach.¹¹⁷

The intelligence community was also keeping a watch on Gorbachev’s opposition, and their assessment suggests that although the US saw new appointments as a promising sign of new policies, this change was by no means assured and plenty of hardliners remained. For example, in 1985 the CIA argued that Gorbachev had been effective in marginalizing the old

¹¹³Director of Central Intelligence, *Soviet Strategic and Political Objectives in Arms Control in 1985*, SNIE 11-16-85/L, see n. 80.

¹¹⁴In noting the rise of Alexandr Yakovlev and the move of longtime US Ambassador Anatoly Dobrynin to the Secretariat, the estimate highlighted both officials’ experience in the US and in Canada. Central Intelligence Agency, “The 27th CPSU Congress: Gorbachev’s Unfinished Business,” see n. 112.

¹¹⁵For a more complete account of Gorbachev’s other senior replacements and efforts to remove the influence of the old guard, see: Grachev, see n. 37, 76-77.

¹¹⁶Director of Central Intelligence, *Soviet Strategic and Political Objectives in Arms Control in 1985*, SNIE 11-16-85/L, see n. 80.

¹¹⁷Similar comments on how surprising Akhromeyev was in both manner and negotiation approach can be found in several memoirs of Reykjavik, including: Kenneth L. Adelman, *The Great Universal Embrace: Arms Summitry - A Skeptic’s Account* (New York, NY: Simon and Schuster, 1989).

guard, but there is a clear tone of uncertainty in the assessment: “Opposition to Gorbachev for now appears disorganized.... Despite his strong position, Gorbachev does not have an entirely free hand... Independents and even allies might balk at some aspects of Gorbachev’s freewheeling type. There are some signs, moreover, that Gorbachev’s initiatives have already been watered down or met resistance.”¹¹⁸ The CIA also speculated that Gorbachev likely “drew criticism in the Politburo” following the Geneva Summit which had few tangible results.¹¹⁹

4.4.3 Differences from prior leadership changes

The few years prior to Gorbachev’s leadership were characterized by two other changes in Soviet leadership. Brezhnev died in November 1982 and was replaced by Yuri Andropov, who died 15 months later and was replaced by Chernenko. There are two reasons for focusing on Gorbachev’s leadership change as the key source of uncertainty in foreign policy intentions rather than either of these two prior changes. First, much more was known by the US about Andropov and Chernenko at the time, and neither of these leaders made any major changes in their Cabinets. Even then, their leadership shifts still created some uncertainty in US assessments but perhaps not enough to draw changes from the US position. Second, the limited uncertainty that was created by these leadership changes did not have time to translate into foreign policy changes or attempts at negotiations because the turnover happened very quickly. As Reagan said during his second electoral campaign, he wanted to meet with a Russian leader, “but they keep dying on me.”¹²⁰

¹¹⁸Central Intelligence Agency, “Gorbachev, The New Broom,” see n. 79. The same intelligence estimate also has a curiously redacted section on the impact of Soviet leadership politics on the US-Soviet summit in Geneva.

¹¹⁹Director of Central Intelligence, *Soviet Strategic and Political Objectives in Arms Control*, Mar. 1, 1985, Reagan Collection, CIA FOIA Electronic Reading Room.

¹²⁰Reagan quoted in: Oberdorfer, see n. 15, 141. It was a line that Reagan reportedly used frequently. Mann, see n. 87, 223.

The previous changes in Soviet leadership had also created increased uncertainty about the Soviet interests, though to a lesser extent. The first leadership change, from Brezhnev to Andropov, created more of an opportunity from the US perspective than the next one. As Andropov came to power, some intelligence officials argued that he would bring a new focus on Soviet domestic problems, an assessment that was later applied to Gorbachev as well. Some intelligence assessments described the importance of the Andropov leadership change: “In sum, the US faces a new and, in many ways, far more intelligent and skillful adversary than we confronted in Khrushchev or Brezhnev.”¹²¹ In the same memo to the CIA director, the CIA deputy director for intelligence argues that Andropov and a sense of a “new beginning” in Soviet leadership would mean “imaginative Soviet initiatives” in the sphere of INF issues but not through arms control with the US, as the USSR believed that cooperation would hold “little prospect for success for years to come.”¹²² Andropov was thought to be better informed than Brezhnev had been on economic and military realities, and so possibly more practical on national security issues than Brezhnev had been. He was also somewhat of an outsider operating within the Soviet system and US policymakers saw him as “something new” and “rather mysterious.”¹²³ However, US policymakers also had considerable prior information about Andropov as a hardliner, and had few reasons to suspect that he might have liberal policies, especially on security; Andropov was a former Chairman of the KGB and was thought to have designed the Soviet intervention into Hungary in 1956.¹²⁴

When Chernenko replaced Andropov, the US government prepared an extensive list of options for discussions with the US, estimated possibilities of new meetings with high

¹²¹Memo to Director of Central Intelligence Casey from Deputy Director for Intelligence Robert Gates, “Andropov: His Power and Program,” Nov. 20, 1982, Reagan Collection, CIA FOIA Electronic Reading Room.

¹²²Ibid.

¹²³Art Hartman, interview with Don Oberdorfer, Nov. 3, 1989, Don Oberdorfer Papers, Box 2, Folder 16.

¹²⁴Matlock, see n. 1, 49.

level Soviet officials, and considered engaging track-two channels as a way to reach out as another private channel to Soviet leadership. There were some indications that the USSR was interested in changing its approach to broader US relations in 1984, but the US saw Chernenko as unlikely to be able to effectively change the direction of Soviet strategic weapons programs.¹²⁵ Due to his advanced age, it was unclear how much power Chernenko had in foreign policy. Ultimately, this uncertainty period was very short, as the USSR quickly began to voice strident opposition to the SDI proposal and was not forthcoming in senior level meetings.¹²⁶

This evidence on US reactions to leadership changes before Gorbachev suggests that the political turnover itself did increase uncertainty to some extent, but that period of uncertainty needed to stretch for a longer time frame in order to have a real impact on security policy. Both leaders gave strong signals of continuity in position almost right away, and also died before the US had a chance to evaluate the possibility for any new policies. Change in US beliefs in response to Andropov and Chernenko was also limited because neither leader made changes in the senior foreign policy bureaucracy, while in Gorbachev's case these additional leadership shifts provided further indicators of the possibility for new policy.

Whatever real changes were happening in the Soviet attitude towards international security, the US was fairly slow to perceive them, and the overall uncertainty in US beliefs was apparent in how senior officials continued to disagree well past Gorbachev coming to power. Even in the fall of 1987, with the INF treaty nearly complete, there were some views like those of Robert Gates, who argued that Gorbachev was like his predecessors seeking only to improve Soviet strength, while others like George Shultz found such assessments to

¹²⁵National Security Planning Group, "Soviet Defense and Arms Control Objectives," see n. 6.

¹²⁶Shultz, *Turmoil and Triumph: Diplomacy, Power, and the Victory of the American Ideal*, see n. 53, 473-474.

be off the mark, and saw the USSR as increasingly less oriented towards threatening the US and its allies.¹²⁷ As discussed in the next section, this longer period of uncertainty was however important for giving enough time for treaty negotiations to progress.

As expected in Hypothesis 2, the domestic political volatility created by the leadership change of both Gorbachev and his senior advisors created greater uncertainty in the US about Soviet incentives for arms control cooperation. The evidence shows that both the US intelligence community and high level policymakers paid close attention to these leadership changes and sought to understand their implications for Soviet security policy. The assessments however were mixed, characterized by both guarded optimism that the USSR was becoming a more cooperative type of state and skepticism that the new Soviet leadership would pursue anything other than the same competitive and duplicitous behavior that the US had seen in prior years. The evidence presented in this section reveals one of the key flaws of ideology-based explanations for the INF treaty. A change in Soviet thinking was only a possibility when Gorbachev assumed power, and indicators of new incentives were not clear from the US perspective. It was also far from clear that the new vigor that Gorbachev seemed to bring was more than personality or propaganda, and would translate into real policy changes that were supported by a complex Soviet leadership bureaucracy.

4.5 Late negotiations: 1985-1987

In March 1985, the US and USSR returned to the negotiating table in Geneva, but changes in positions did not start until after the first Reagan-Gorbachev Summit in Geneva in November 1985. In the two years between the Geneva Summit and the Washington Summit of December 1987, the US and USSR came to an agreement on the INF treaty, including its

¹²⁷Matlock, see n. 1, 269.

highly intrusive information provisions. This section first provides a quick history of the events in the second period of INF treaty negotiations, demonstrating how the interactions between the adversaries, and their treaty proposals, differed from those in the first period prior to Gorbachev's power transition. It then evaluates the hypothesis on shifts in the US position on information exchange that we would expect to see with greater uncertainty about Soviet intentions: though remaining at a high verification level, the proposals become more moderate, less costly, and more acceptable to the both sides. Finally, the section addresses the shift in Soviet acceptance of intrusive verification that was also essential in leading to the outcome of the INF treaty signed in its observed form.

4.5.1 New rounds of negotiations, signs of compromise, and an INF Treaty signed

Going into the second negotiations period, immediately prior to the political changes in the USSR, the basic expectation about Soviet intentions were largely the same as they had been in the previous period. In 1984 the Defense Department and the CIA assessed that, "there is very little evidence that [the USSR] is interested in an agreement" and that the USSR believed that "treaties in START and INF are out of reach."¹²⁸ Both departments warned that the US should not make concessions just for the sake of having a treaty, and President Reagan agreed that the US wanted a good agreement, not just any agreement.¹²⁹ President Reagan particularly was coming from a place of deep suspicion, stating in a National Security Policy Group meeting on arms control, "I have to believe that the USSR (mainly its leaders) has a world aggression program. But in meetings we have to show an understanding of its

¹²⁸National Security Planning Group Meeting 104, "Nuclear Arms Control Discussions," Mar. 27, 1984, The Reagan Files.

¹²⁹Ibid.

concerns: a fear of invasion, a fear of being surrounded.”¹³⁰

The agreement to resume arms control talks came at the very end of Chernenko’s tenure, but US intelligence attributed the change to Gorbachev,¹³¹ and he “reportedly ratified the return to the bargaining table in Geneva even before Chernenko’s death.”¹³² In the summer of 1985, the US and USSR decided to hold a summit in Geneva. The Geneva Summit marked the first meeting between Gorbachev and Reagan. In preparing for the Geneva Summit, US policymakers noted changes in Soviet tone, but did not expect much in the way of policy change. On the eve of the Geneva Summit, a paper prepared for the President noted that “Soviet diplomacy has become more energetic recently, although there have been no major policy departures,” including “zero flexibility on INF.”¹³³ On the Soviet side, there was a desire to limit US military advancement, but discussions in the Politburo in preparation for the Geneva summit show that leaders were clearly concerned that the US “could not be relied on” to really allow any real limits on their capabilities. Some Soviet leaders believed that the US was not genuine, that they were just “playing” with the issues while the Soviet side took them seriously.¹³⁴ The Geneva summit did not lead to any conclusive new steps in arms control, but was the first starting point in raising more questions about possibilities for cooperation. This was especially true on the US side where officials had a chance to personally experience Gorbachev’s new manner combined with fairly expected Soviet policy positions.

In February 1986, US officials began to think about proposing a draft INF treaty,

¹³⁰National Security Planning Group, “Next-Steps in the Vienna Process,” see n. 54.

¹³¹Central Intelligence Agency Directorate of Intelligence, “Gorbachev’s Prospective Course,” Sept. 9, 1985, CIA FOIA Electronic Reading Room.

¹³²Central Intelligence Agency, “Gorbachev, The New Broom,” see n. 79.

¹³³US Department of State, “The Secretary’s Meeting with Soviet Foreign Minister Shevardnadze,” July 31, 1985, US Department of State FOIA Virtual Reading Room.

¹³⁴Politburo Session, April 24, 1986. Gorbachev Foundation, see n. 2, 162.

including an inspections regime which the USSR had previously rejected. It was not clear whether some tentative Soviet statements on verification were serious, and US policymakers wanted to test them. At the time, President Reagan believed that INF negotiations and proposals would expose that the USSR was not serious about negotiations.¹³⁵ In January 1986, Gorbachev made a bold public proposal, calling for the full elimination of all nuclear weapons. Many Western observers and senior US policymakers interpreted this move as propaganda, but President Reagan was interested, and though the US should engage on the issue.¹³⁶ The period from the Geneva summit through the first half of 1986 was therefore characterized by unclear policy signs from the USSR, and a growing interest by the US to test Soviet seriousness.

The US and USSR planned a second summit in Reykjavik in October 1986. Going into the Reykjavik Summit, US officials did not expect the USSR to make any major moves on arms control, possibly some “exploration” on INF.¹³⁷ Most of the preparation on the US side focused on INF issues. In contrast, the Soviet team came to Reykjavik with bigger ideas. Like Reagan, Gorbachev was directly involved in arms control decision making, and himself even headed meetings of the Soviet arms control group, the Big Five, in preparation for the Reykjavik summit.¹³⁸ The Soviet position for Reykjavik reflected a number of policy changes that had been developed in the prior months. The USSR was willing to support a limit of zero INF missiles in Europe, and it internally framed this as the Soviet preference which stood in opposition to the latest US position of 100 weapons on each side. Soviet policymakers were interested in limiting SDI, but the priority was INF and removing the

¹³⁵National Security Planning Group Meeting 127, “Arms Control – Responding to Gorbachev,” Feb. 3, 1986, The Reagan Files.

¹³⁶ibid. David Hoffman, *The Dead Hand: The Untold Story of the Cold War Arms Race and Its Dangerous Legacy* (New York, NY: Doubleday, 2009), 240.

¹³⁷Adelman, see n. 117, 36.

¹³⁸Savelev and Detinov, see n. 8, 119.

Pershing II missiles from Germany.¹³⁹ The internal preparation documents even show the preference order of how the USSR saw the options: zero in Europe as the Soviet preference; followed by limited numbers of missiles in Europe but not the Pershing IIs; followed by a very limited number of Pershing II missiles.¹⁴⁰

At Reykjavik, the Soviet proposal on both INF and other arms control issues were largely unexpected by the US, and working groups negotiated throughout the night on the first day of the summit to try to iron out a possible agreement. Gorbachev accepted zero INF missiles in Europe (with Asia to be negotiated separately) and dropped the demand to include French and UK forces in an agreement.¹⁴¹ US officials were also surprised by the Soviet counterparts they met at Reykjavik. The military man, Akhromeyev, turned out to be more reasonable, while it was the Foreign Ministry Representative, Karpov, who sought more caution. Importantly, these impressions further contributed to beliefs about the possibility of new Soviet policies on arms control, as they were “just the opposite of the message provided by the CIA ‘intelligence’ report of twenty-four hours ago.”¹⁴²

In a session with Reagan at Reykjavik, Gorbachev stated that the Soviet Union would be willing to accept on-site inspection and verification for the INF treaty. Real progress on INF, including on serious issues such as verification provisions, had been stalled at the Geneva negotiations since the Soviet walk-out in 1983.¹⁴³ Gorbachev’s new commitment on

¹³⁹Based on minutes from a meeting of the Soviet preparatory group for the Reykjavik summit, October 4, 1986. Gorbachev participated in the meeting. Text of the minutes is available in Russian in the documents collection: Gorbachev Foundation, see n. 2, 167.

¹⁴⁰“Reference material to major positions for the meetings of the General Secretary CPSU Central Committee with the President of the United States in Reykjavik,” October 11-12, 1986, Vitalii Leonidovich Kataev Papers 1966–1999, Box 3, Folder 13.

¹⁴¹“U.S. Memorandum of Conversation, Reagan-Gorbachev, Third Meeting, 12 October 1986, 10:00 a.m. - 1:35 p.m.,” Oct. 12, 1986, Electronic Briefing Book No. 203, doc13, The National Security Archive.

¹⁴²Shultz, *Turmoil and Triumph: Diplomacy, Power, and the Victory of the American Ideal*, see n. 53, 764.

¹⁴³Thomas Graham, *Disarmament Sketches: Three Decades of Arms Control and International Law* (Seattle: Institute for Global and Regional Security Studies : University of Washington Press, 2002), 124.

INF was clear, but there was no further development of this point at the presidential level, and the working group of US and Soviet senior staff likewise did not go into a discussion of information exchange during their marathon all-night session.¹⁴⁴ After two days of intense negotiations, the Reykjavik meeting ultimately ended without an agreement due to differences on SDI – Gorbachev demanded research be restrained and linked SDI to Soviet compromises on other issues, including INF, while Reagan refused to accept any limitations on SDI.¹⁴⁵

Close examination reveals that while the INF treaty generally resembles what was discussed at Reykjavik, the INF discussions at the summit largely represent statements of mutual interests to come to an agreement and not commitment on an actual treaty. The US and USSR negotiated most of the key components of the treaty with considerable bargaining and back-and-forth over the next year. Although the details of the treaty were being negotiated in Geneva, issues appeared to routinely rise to the ministerial and even presidential level. In 1987, Secretary of State George Shultz held two meetings with Gorbachev and five with Shevardnaze, all of which included efforts to negotiate an INF treaty. In an April 27 meeting with Shultz in Moscow, Gorbachev agreed to a level of zero on shorter range missiles, and in a June meeting also in Moscow, to the zero level on longer range intermediate missiles in both Europe and Asia.

There was concern throughout Shultz's meetings and then particularly in September

¹⁴⁴ "Russian transcript of Negotiations in the Working Group on Military Issues, headed by Nitze and Akhromeev," 11-12 October, 1986, Electronic Briefing Book No. 203, doc17, The National Security Archive.

¹⁴⁵ A few months after Reykjavik, in February 1987 Gorbachev 'untied the package' which linked an INF treaty to START and SDI. This allowed for the INF to be negotiated as a separate treaty without an agreement on the other pieces. The decision to untie the package was voted on in the Politburo on February 26, 1987 with support even from members who would later oppose the INF. For a record of the meeting, see: Politburo, "On Soviet-American Relations and Negotiations on Nuclear and Space Armaments," Mar. 26, 1987, National Security Archive Electronic Briefing Book 238: The INF Treaty and the Washington Summit: 20 Years Later, Archive of the Gorbachev Foundation, Moscow. Translated by Svetlana Savranskaya for the National Security Archive. For a full historical assessment of the decision to untie the package, see: Elizabeth C. Charles, "The Game Changer: Reassessing the Impact of SDI on Gorbachev's Foreign Policy, Arms Control, and US-Soviet Relations" (PhD diss., The George Washington University, 2010).

1987 that all the issues on the INF treaty would not be quickly resolved.¹⁴⁶ Numerous sources, including memoirs of negotiators and interviews with policymakers suggest that the key remaining issues to be negotiated at that point had to do with verification. A number of the more specific treaty terms were agreed to between Shultz and Shevardnadze in September 15-18, 1987,¹⁴⁷ but the ministers met again at the end of October in Moscow, and had a final session in November in Geneva focused almost entirely on INF verification issues.¹⁴⁸

On December 8, 1987, Reagan and Gorbachev finally signed the INF treaty. The intense back-and-forth negotiations show that a mutually agreed-upon treaty was not done nearly until the moment that it was actually signed. The information exchange provisions in the final treaty included: submission of information on the complete inventory of all relevant weapons, on-site inspections, short-notice inspections, continual monitoring of sites where weapons were eliminated and produced. These provisions had been dismissed as unattainable in the earlier period of negotiations.¹⁴⁹

4.5.2 Monitoring and verification provisions

The form of the INF treaty, which calls for information exchange combined with direct and intrusive observation of the adversary's facilities, goes hand-in-hand with a treaty being signed at all, since other treaty forms would have been rejected in favor of the no treaty option. However, it is worth looking a bit more closely at how both sides approached the information exchange provisions, and what role they played in the treaty negotiations as specific design features of the agreement.

As discussed in the previous section, during the first period of INF negotiations the

¹⁴⁶Central Intelligence Agency Directorate of Intelligence, "Gorbachev's Current Summit Calculations," Sept. 10, 1987, CIA FOIA Electronic Reading Room.

¹⁴⁷Shultz, *Turmoil and Triumph: Diplomacy, Power, and the Victory of the American Ideal*, see n. 53, 984.

¹⁴⁸Palazhchenko, see n. 106, 71.

¹⁴⁹Shultz, *Turmoil and Triumph: Diplomacy, Power, and the Victory of the American Ideal*, see n. 53, 1006.

US wanted unreasonably high verification terms, ones that they knew the USSR would reject, and in fact ones that upon closer examination the US would reject as well. The theory predictions suggest that a treaty acceptable by both sides would be possible when uncertainty increases, and the treaty at that condition of beliefs would also be less intrusive than the one that would have been required when the adversary was definitely expected to have strong incentives to cheat. So, in the course of negotiations we would expect the treaty provisions to decrease in intrusiveness to get to a mutually acceptable level, which would then be not too costly for either side. In the evidence, this pattern clearly emerges. In the second period of negotiations, the US backed away from its most extreme verification demands for two reasons: they were too costly for the US itself to accept, and the expectations of Soviet cheating became somewhat reduced by the possibility of policy shifts from Gorbachev and his leadership. The evidence also shows that the information features were in fact treaty design decisions rather than assumed or clearly agreed on by both sides; the verification provisions were a major negotiating hurdle through the very last days of treaty negotiations and they were ultimately the make-or-break element that would allow agreement on a final treaty by both sides.

The importance of information exchange as a feature of the agreement is clear because verification issues routinely came up at the presidential and ministerial level through both time periods of negotiations, and President Reagan himself was attentive to the evolution of verification positions.¹⁵⁰ In his diary, President Reagan wrote about his September 27th 1985 meeting with Shevardnadze, noting, “For the 1st time they talked of real verification

¹⁵⁰For example, Foreign Minister Gromyko brought up US concerns over verification at a September 1984 meeting with President Reagan, who reiterated the need for such tools and the USSR’s constant rejection of them. (Memorandum of Conversation President Ronald Reagan and Soviet Foreign Minister Andrei A. Gromyko, “The President’s Meeting with Foreign Minister Andrei A. Gromyko of the Soviet Union,” Sept. 28, 1984, CWHIP Document Reader Part IV, *The Euromissiles Crisis and the End of the Cold War: 1977-1987*).

procedures.”¹⁵¹ Of course, treaty negotiators in Geneva dealt with the details, but numerous major decisions were made at a higher level. NSC documents show continuing concerns over verification terms at very high levels – President and Cabinet – through October 1987¹⁵² and Secretary Shultz and Foreign Minister Shevardnadze were personally involved right until the treaty was signed.

It is also clear that while the provisions on levels and types of limitations were the foremost negotiation challenge, the information exchange provisions were a critical deal-breaker for the treaty as well.¹⁵³ In the first period of negotiations, if the USSR had simply agreed to the zero option but rejected intrusive verification, the US would not have accepted a deal. As discussed in more detail below, in the second round, even though the treaty seemed almost done in November 1987 with only verification issues left to be worked out, the negotiators felt that if the verification issues were not resolved to US satisfaction, they would be willing to walk away from the entire treaty.¹⁵⁴

Changes in the US position and Presidential decisions on verification

Details on changes in the US position on verification between the two negotiation periods are difficult to track in the historical record, at least in part because the early US position was not clearly laid out and developed as a proposal. US officials knew that they wanted a high degree of verification, but had largely not set terms beyond that. However, there are

¹⁵¹Ronald Reagan, “Friday, September 27 1985,” in *The Reagan Diaries*, ed. Douglas Brinkley (Harper Collins, 2007).

¹⁵²National Security Planning Group Meeting 168, “Upcoming Shultz-Shevardnadze Meeting in Moscow,” Oct. 14, 1987, The Reagan Files.

¹⁵³The key points of contention on the limits themselves in the course of various US and Soviet proposals were: the number of INF missiles which would remain (zero or even limited amounts on each side), whether both European and Asian missiles would be included, whether both short-range and long-range INF missiles would be included, and whether French and British forces would be counted.

¹⁵⁴David Jones, former Special Assistant to INF treaty negotiator Ambassador Glitman, interview with the author, May 7, 2014.

some important indicators that in comparison to the general verification demands of the first period, after 1985 US terms became more moderate and reasonable for Soviet acceptance of a treaty.

US policymakers knew that the verification demands in the first negotiations period were too high. This recognition was clear at the end of 1984, when the USSR was just starting to make moves back to the negotiating table. George Shultz regularly met on security and arms control issues with what he called the “Family Group,” including Caspar Weinberger, Bill Casey, and Bud McFarlane. In one of these sessions, “Bill Casey admitted that our rhetoric on verification had carried us too far. Perfect verification simply could not be delivered he argued, so we need to be more careful and measured in our statements on the subject. I took this as a good sign that he was thinking in positive terms about the possibilities of negotiated outcomes.”¹⁵⁵ One of the elements that the US proposed during the first period of negotiation was “any time any where inspections.” These would allow on-site inspections of any facility, without advance notice, without a right of refusal, with freedom for inspectors to have quick access and their own instruments.¹⁵⁶ There was very little expectation from most US officials that the USSR would ever accept such measures.

Gorbachev accepted on-site inspections for INF in principle at Reykjavik in October 1986. In his memoirs, Gorbachev suggests that at the summit, the “Americans would not accept their own zero option” and even though they had made the question of verification central in previous negotiations, “suddenly they started maneuvering on this issue.”¹⁵⁷ Though not entirely clear, Gorbachev’s recollections suggest that at that point in the summit, there was not an agreed-upon level of verification that would have simply made a treaty

¹⁵⁵Shultz, *Turmoil and Triumph: Diplomacy, Power, and the Victory of the American Ideal*, see n. 53, 508.

¹⁵⁶Michael Krepon, *Arm Control in the Reagan Administration*, vol. Volume X (Lanham, MD: University Press of America, 1989), xvi.

¹⁵⁷Gorbachev, see n. 2, 418.

possible, and it is possible that the US that also needed to revisit its position, not just the USSR.

The general US position on the verification terms was set in the spring of 1987, and at that point President Reagan was clearly concerned that the treaty would not be possible without that piece. Following a meeting with the lead Geneva negotiators, Reagan wrote in his diary regarding the zero in Europe proposal: “It looks good but we mustn’t get too carried away until we see how far they’ll go on verification.”¹⁵⁸ Even earlier, at the start of the second period of negotiations, the US had started to take a more serious approach to developing a cohesive INF position that was intended for negotiation rather than gaining an upper hand over the USSR in public relations.¹⁵⁹

During the summer and fall of 1987, teams in Geneva spent time negotiating all the technical details that were necessary to put a verification regime in place. The accounts from treaty negotiators suggest that in most cases, the USSR turned to the US to come up with ideas for solutions to inspections challenges, and US negotiators worked to come up with options that they seriously hoped and assessed that the Soviet side could accept. Though it had started with the stronger demands for verification, by the summer of 1987 the US was arguing in favor of more limited inspections.¹⁶⁰ The US backed away from the proposal of “any where any time inspections” as these were judged as both too costly for the US side to actually accept on its own territory, and as having limited additional value on top of what would be observable by more limited means. Instead, only declared facilities would be inspected under the treaty, and there would no direct access to production facilities.¹⁶¹

¹⁵⁸Ronald Reagan, “Friday, March 6 1987,” in *The Reagan Diaries*, ed. Douglas Brinkley (Harper Collins, 2007).

¹⁵⁹Oberdorfer, see n. 15, 100.

¹⁶⁰Raymond Garthoff, *The Great Transition: American-Soviet Relations and the End of the Cold War* (Washington DC: The Brookings Institution, 1994), 327.

¹⁶¹Krepon, *Arm Control in the Reagan Administration*, see n. 156, xvi.

Policymakers recognized that no verification regime is perfect, and it was certainly possible for the USSR to cheat on even an intrusive inspections regime. A former negotiator recounts that, “there was a widespread assumption, at OSD and elsewhere, that the Soviets would never allow inspectors to see a violation, whatever the treaty provisions might say.”¹⁶² Given that understanding however, in the second period we see that the US was willing to propose more moderate and mutually acceptable measures and therefore run that risk of possible cheating in treaty implementation.

A further indication that US verification levels were not simply as high as possible is the rejection of several Soviet proposals by the American side. In 1987 the Soviets began suggesting a degree of inspections that would allow both sides essentially full access to any facility that might be associated with INF missile production. While US negotiators in Geneva saw these proposals as ploys to outplay or even irritate the verification discussion,¹⁶³ it is very possible that the Soviets were quite serious about these ideas. In fact, earlier Soviet discussions in preparation for the Reykjavik summit suggest that the USSR was interested in on-site inspections for missile production facilities (something that both sides ultimately agreed on in a very limited way, with one facility per side).¹⁶⁴ Gorbachev himself raised a proposal of highly intrusive verification in an April meeting with Secretary Shultz, including greater access for inspections than the US was actually willing to do.¹⁶⁵ In November 1987,

¹⁶²Roger Harrison, “The Endgame in Washington,” in *The Reagan-Gorbachev Arms Control Breakthrough: The Treaty Eliminating Intermediate-Range Nuclear Force (INF) Missiles*, ed. David T. Jones (Washington, DC: Vellum New Academia Publishing, 2012), 80.

¹⁶³Maynard W Glitman, interview with Foreign Affairs Oral History Project, Feb. 24, 2001, Association for Diplomatic Studies and Training.

¹⁶⁴“Facts on the Soviet position in negotiations on nuclear and space armaments including Mikhail Gorbachev suggestions on the Reykjavik meeting,” 1986, Vitalii Leonidovich Kataev Papers 1966–1999, Box 5, Folder 22.

¹⁶⁵Memorandum of Conversation, “M. S. Gorbachev and U.S. Secretary of State George Shultz,” Apr. 14, 1987, National Security Archive Electronic Briefing Book 238: The INF Treaty and the Washington Summit: 20 Years Later, Archive of the Gorbachev Foundation, Moscow. Translated by Svetlana Savranskaya for the National Security Archive.

Shevardnadze, Akhromeyev, Shultz and Powell met yet again in Geneva to negotiate INF problems having to do almost entirely with verification.¹⁶⁶ At this meeting, it was not just a matter of the USSR being unwilling to accept certain provisions. The US had problems with some proposed verification measures and did not want to go too far on intrusiveness. The issues that were the longest to set in negotiations had to do with the US seeking to protect certain sites from monitoring.¹⁶⁷

These shifts in the US position were not just a matter of technical decisions made at the working level by experts, but were rather significant political choices made by Reagan to make the treaty a reality. Unlike the cases of NSC meetings or ministerial meetings, there is very little historical material on President Reagan's involvement in INF decision-making in September 1987, when the main hurdles of the treaty were focused on verification issues. In fact most historical narratives overlook this moment, and the account has been tucked away in interviews recorded in 1990.¹⁶⁸ However, a closer investigation reveals that during this time, the president and several senior level advisers explicitly decided to push ahead in pursuing an INF treaty and to do so made decisions on information exchange provisions that made the treaty more likely to be accepted by the USSR.

In early September 1987, President Reagan was still hearing advice from some parts of the government to abandon the INF treaty. Some believed that it would take up energy that could better be used for negotiating an agreement on START, or that the US should not sign it because the Russians could not be trusted and it was some kind of trick on their part.

¹⁶⁶In noting this meeting in his memoir, Akhromeyev states that the treaty was nearly complete except for some verification issues which urgently needed to be resolved. Akhromeev and Kornienko, see n. 36, 136.

¹⁶⁷Palazhchenko, see n. 106, 71.

¹⁶⁸In the interview with Don Oberdorfer, James Baker refers to his account of these September 1987 decisions and internal meetings as something that has not been in print so far. It does not seem to have come up in print in the numerous books and personal accounts I reviewed for this project, and Oberdorfer did not to use this account in his book, perhaps because it was too focused on the INF to fit with the broader story he was seeking to tell.

However, as Howard Baker (Reagan's Chief of Staff at the time) remembers, the President was insistent about trying to get a treaty completed. In the meeting with the President, Baker asked Frank Carlucci, then National Security Advisor, to identify all the remaining unresolved issues on the INF, a list that ended up with 50 or 60 items.¹⁶⁹

Carlucci, Baker and the President met to go over the list for about four hours on September 10, 1987, a meeting that both Carlucci and Baker remember vividly as taking place in a hotel room in Miami the day the President was going to meet with the Pope. According to Baker, "we discussed each item, and the President made a decision on every one of those issues. [Frank] issued them as presidential decisions to negotiators." The main issues decided at the meeting had to do with verification concerns, "what verification, what level needed verification, regime." Carlucci suggests that President Reagan largely went with his recommendation on the decisions, but there were also a number of issues which Carlucci had not been able to settle and in those cases principals including Weinberger and Shultz came to argue their case before the President directly (likely before but possibly after the September meeting – the transcript is unclear in this regard).¹⁷⁰

At another point in his interview Baker came back to the Miami account, saying, "That meeting with Reagan and Frank Carlucci ... I saw American policy change and presidential instructions issued to our negotiators that produced a treaty, and it produced a treaty almost immediately after that." Baker calls the Miami meeting "the most important thing that happened" while he was in the White House and "the event that changed the course of history."¹⁷¹

¹⁶⁹Howard Baker, interview with Don Oberdorfer, June 26, 1990, Don Oberdorfer Papers, Box 2, Folder 4; Carlucci, see n. 54.

¹⁷⁰Carlucci, see n. 54.

¹⁷¹Baker, see n. 169. Although the State department was likely involved in creating the list of issues that Carlucci presented to the President, George Shultz does not mention any of this decision making in his memoir, which, at over 1000 pages, is perhaps the most detailed account of this period. In a recent interview, Rozanne Ridgway, who worked closely with Shultz on USSR-related issues, did not recall this

The first hand accounts of Presidential decisions indicate that US policy changed during this moment, just prior US and Soviet public agreement on the INF “in principle.” Since previously US positions were very stringent on verification, this account provides strong evidence that Reagan accepted some compromises and moderation on the information-related provisions that made them more acceptable to the Soviet side. The shift in US position on verification supports the theory expectation that in becoming less certain that the Soviets would cheat the US became more willing to take the risk with a level of information provisions that was still high but lower enough to be acceptable by the other side.

Change in the Soviet Position

Even if the US proposals did become more reasonable, the USSR still had to accept them. Considering where the USSR started in the first negotiation period, rejecting all kinds of on-site verification, a considerable change on the Soviet position had to occur as well. How did the USSR ultimately accept not only the treaty in general but specifically these provisions? The answer to this question is far from obvious in the historical record, and scholars who have sought to address it have had only mixed results. In his interviews with numerous foreign policy participants on both the Soviet and US side, Don Oberdorfer frequently asked questions on when the shift in the Soviet approach to verification occurred and why. The answers were hesitant, and perhaps for Oberdorfer’s purposes inconclusive, as he did not include this element in his book.¹⁷²

As noted in the earlier section, during the first period of INF negotiations the USSR

list of issues. Shultz discusses his meeting with Shevardnadze in Washington just days later, and identifies that meeting as a key point of progress on the INF treaty. However, any connection between the President’s decisions on INF and the negotiations with Sheverdnazde is missing. One possible indication that the decisions of the Miami meeting informed the Shultz-Sheverdnazde negotiations is that Shultz pulled in Frank Carlucci to participate in the discussion on INF. Shultz, *Turmoil and Triumph: Diplomacy, Power, and the Victory of the American Ideal*, see n. 53, 987. Rozanne Ridgway, former Assistant Secretary of State for European Affairs, interview with the, June 3, 2015.

¹⁷²Oberdorfer, see n. 15.

believed that the US would be likely to use verification to spy on Soviet capabilities. The evidence presented here, combined from US and Russian accounts as well as interview sources, shows that in the second period, the Soviet views on inspections in particular began to change for several reasons: 1) the influence of internal personnel change; 2) security policy shifts that reoriented Soviet incentives for cooperation; and 3) increased flexibility in response to changing views of the US. These findings support the theory expectations from the point of view of the other player – the verification features proposed are in a range that is considered not prohibitively expensive, but are still high enough that a state that plans to cooperate (in this case the USSR) feels that it will still be able to catch possible cheating by its opponent.

First, the internal leadership shifts Gorbachev had put in place also had an impact on the Soviet approaches to verification. Combined with a growing evolution in expert opinion, pressure from the top, directly from Gorbachev and Shevardadze, was critical to pushing reforms on verification quickly through the bureaucracy. As Gorbachev assumed power, new analysis began to emerge and reach not only technical but also political leaders of the USSR that on-site inspections would not reveal that much more secrets than tools like satellite observations. Analysis in various Soviet agencies began to conclude that prior fears of inspections had been exaggerated.¹⁷³ A former Soviet (and later Russian) military leader, retired Colonel-General Viktor Yesin recounted that some officials at lower ranks were willing to go for more intrusive inspections even earlier, around 1983. However, during that period, the military-industrial complex was very strong, and such ideas did not come up to higher ranks. When Gorbachev brought in new people at the top, it allowed ideas to come to the forefront that had been starting to develop earlier as well.¹⁷⁴ So while new ideas

¹⁷³Savelev and Detinov, see n. 8, 152-153. The official Soviet position in the first period of negotiations (primarily on START but the same principles applied to INF) was for verification through satellites (national technical means), exchanges of notifications and other data, and other voluntary measures on the basis of invitations. See also *ibid.*, 74.

¹⁷⁴Victor Yesin, see n. 97.

on verification were building among experts from below (including in the military, among technical designers and even in the KGB), without the top level pressure they might have taken far longer to come to fruition in the form of accepted arms control policy.¹⁷⁵

Gorbachev's thinking about verification began to emerge just as he was consolidating power through appointments of his supporters, but it even outpaced the views of his senior advisors. Former high level officials remember that Gorbachev first started to talk privately about the possibility of accepting on-site inspections for nuclear arms treaties while at the November 1985 Geneva Summit, and these ideas were quite unexpected even for Gorbachev's close allies who were present at the meeting.¹⁷⁶ Fedor Burlatsky, an academic and advisor to Gorbachev described the shift in Gorbachev's thinking on verification during this period as a questioning of why the USSR should be more afraid of on-site inspection than the US, since the US was actually ahead in military technology and therefore intrusive observation might be more dangerous for them than the Soviets.¹⁷⁷

Top-down pressure on verification directly contributed to movement in the INF negotiations. Throughout most of 1986 and through the spring 1987, the Soviet delegation negotiating the INF treaty in Geneva was unwilling to do more on verification despite Gorbachev's January 1986 statements that the USSR would accept on-site inspections. Gorbachev had to

¹⁷⁵Savelev and Detinov, see n. 8, 153.

¹⁷⁶Several former officials describe the same meeting in interviews: Yevgeny Primakov, interview with Don Oberdorfer, Jan. 11, 1990, Don Oberdorfer Papers, Box 1, Folder 19; Fedor Burlatsky, interview with Don Oberdorfer, Jan. 25, 1990, Don Oberdorfer Papers, Box 1, Folder 5; Yevgeni Velikhov, interview with Don Oberdorfer, May 1990, Don Oberdorfer Papers, Box 1, Folders 23. See also Oberdorfer, see n. 15, 232.

¹⁷⁷Burlatsky, see n. 176. All three of these interviews, conducted by Don Oberdorfer, discuss when the changes in position on verification occur, and Oberdorfer asks specifically about the meeting at the Geneva Summit, which all three remember. However, interestingly, none of these former officials can really pinpoint where Gorbachev's ideas on verification came from, or how long he had them. Even Velikhov, who was one of Gorbachev's closest advisors on arms control, issues does not really answer Oberdorfer's direct question on where the thinking on inspections came from or what led to the change in position. Velikhov had himself advised Gorbachev on greater openness with regard to verifying nuclear testing at approximately the same time.

directly pressure the foreign ministry to have his positions on arms control, including those on openness in information exchange, passed down to negotiators in Geneva.¹⁷⁸ Dealing with the hesitation of the Soviet team in Geneva, which was slow to adopt even Gorbachev's publicly stated positions, US negotiators questioned whether Gorbachev had Politburo support for his arms control proposals, or whether there were powerful players – such as in the military – who were acting to prevent changes to the negotiating position regardless of what Gorbachev was claiming.¹⁷⁹

Even in Moscow, working groups for several of George Shultz's meetings on INF made little progress until a meeting with Gorbachev occurred.¹⁸⁰ The negotiators were not forthcoming until April 1987, and finally made progress in October 1987, reportedly following personal instructions from Akhromeyev.¹⁸¹ In between these higher-level meetings, hurdles were ever-present in Geneva, as Soviet negotiators would claim that there was no need for intrusive verification as a matter of routine response to almost any US proposal. In spring 1987 Gorbachev replaced much of the senior military leadership, and the shifts allowed further flexibility in the Soviet position on inspections for missile installations and manufacturing plants.¹⁸² Progress was slowly made under Shevardnadze's pressing, and there was a constant sense that at any time the Soviet military would "revert to the old approach on verification" and the treaty would not be completed.¹⁸³

¹⁷⁸Matlock, see n. 1, 209.

¹⁷⁹Jones, see n. 21, 68.

¹⁸⁰Shultz, *Turmoil and Triumph: Diplomacy, Power, and the Victory of the American Ideal*, see n. 53, 995.

¹⁸¹Jones, see n. 21, 249.

¹⁸²Oberdorfer, see n. 15, 234 Gorbachev replaced military leaders in response to the Mathais Rust incident. On May 28, 1987 Rust, a young pilot, flew his tiny Cessna aircraft into Soviet airspace and landed in Red Square. The incident was a major embarrassment for the Soviet national security apparatus, and Gorbachev used the incident as a pretext for making further leadership changes, including appointing a new Defense Minister, conveniently replacing Sokolov (who had opposed a number of arms control moves, including concession on INF) with one of his closer supporters.

¹⁸³Palazhchenko, see n. 106, 67.

Second, the USSR was in many ways becoming the type of state that had lower incentives to cheat on a security agreement. The Soviet security policy under Gorbachev was increasingly focused on longer-term cooperation and detente or “peaceful coexistence” with the US and NATO.¹⁸⁴ Gorbachev saw a clear connection between the domestic economy and Soviet foreign policy. If disproportionate resources continued to be devoted to defense, it would be more difficult for him to make the kinds of reforms he believed the economy needed.¹⁸⁵ Speaking at a Politburo session in May 1987, Gorbachev stated that the USSR should no longer rely on its military capabilities, even where it had an advantage, to create greater security. The US was spending a huge amount on defense, but it would not be in the Soviet interest to turn the country into a “labor camp” in order to keep up. The USSR had to avoid US attempts to drag it into a crippling arms race.¹⁸⁶ If the Soviet Union was actually not going to cheat on cooperation to try to gain military advantage, as new policies intended, then getting caught though verification was not a danger, while the risk of secrets being revealed was more manageable than previously thought.

However, there was no way for the USSR to convince its adversaries of a change in its incentives to cooperate, and also a big concern that the adversary might actually try to take advantage of the USSR’s more cooperative position. The USSR first agreed to one kind of on-site inspections in the summer of 1986, on observation of military exercises for the Confidence and Security Building Measures and Disarmament in Europe agreement.¹⁸⁷ As the lead Soviet negotiator Oleg Grinevsky recounts, that decision followed considerable debate in the Politburo on the trade-offs of inspections.¹⁸⁸ On one hand, foreigners inside

¹⁸⁴Chernyaev, *My Six Years with Gorbachev*, see n. 95, 43.

¹⁸⁵Brown, see n. 105, 212.

¹⁸⁶Paraphrased translation from Russian by the author from minutes of a Politburo session, available in the documents collection: Gorbachev Foundation, see n. 2, 186-187.

¹⁸⁷Matlock, see n. 1, 209.

¹⁸⁸Records directly from Politburo discussions reveal that this was a contentious debate. Shevardnaze spoke

sensitive areas of the USSR could be a security risk, but on the other hand the USSR would then have the same access to US and NATO countries which was needed to get assurance that the information they were providing was accurate, and “if we had really decided to change from the military to political bases for our security, to base our security on political relationships, then this assurance and info was even more important to us.”¹⁸⁹ Although he does not state it explicitly, Grinevsky’s comment strongly suggests a shift towards incentives for long-term cooperation on the Soviet side, rather than a continuation of seeking advantages through military competition, and a position on information exchanges that arises out of that change in incentives.

Finally, a change in the Soviet position comes about in response to its perception of the adversary, the US. For the Soviet side, greater uncertainty about the US and beliefs that the US may be willing to cooperate did not come from observing a leadership change in the US, but there is evidence of other sources of belief change that contributed to the Soviet Union being more willing to essentially take the risk of cooperating with the US. As documented in earlier sections, in the first period of negotiations, the USSR firmly believed that the US would try to circumvent arms control treaties to gain an advantage and use verification to spy on Soviet military secrets.¹⁹⁰ As negotiations on the INF treaty resumed in 1985, Gorbachev was looking for indications that the US also intended to cooperate and that they were negotiating seriously rather than using the back-and-forth or the treaty itself

out in favor of NTM only, and inspections only on a voluntary basis, while the military representative Akhromeyev accepted on-site inspections and moved on to discussing how many. Minutes from the Politburo session are available in Russian in a recent published primary documents collection: Gorbachev Foundation, see n. 2, 162-163.

¹⁸⁹Oleg Grinevsky, interview with Don Oberdorfer, Feb. 7, 1990, Don Oberdorfer Papers, Box 1, Folder 9 and Oberdorfer, see n. 15, 233.

¹⁹⁰This perception had not shifted prior to the resumption of negotiations, and US intelligence estimated in early 1985 that the USSR still likely perceived the US as aggressive and as a government that viewed few gains from cooperation. Central Intelligence Agency Directorate of Intelligence, “Moscow’s View of the Reagan Administration,” Sept. 9, 1985, CIA FOIA Electronic Reading Room.

to trap the USSR. The historical evidence shows that Gorbachev used several occasions to test US motives on the INF, and signs of US flexibility and compromise motivated his own concessions, making the treaty a more likely outcome.

Shultz believed that Gorbachev needed to see some flexibility on the US side as essentially a signal that the US was willing to cooperate, rather than perhaps try to cheat or otherwise circumvent agreements in order to gain an advantage. For example, it was somewhat puzzling why at Reykjavik, Gorbachev's position was to keep 100 INF missiles in Asia, something that he would give up six months later. Shultz: "I came to believe that this was a test of sorts. Would President Reagan settle for something that was less than precisely what he wanted. An answer of yes would mean to Gorbachev, I speculated, that Ronald Reagan was truly willing to reach an agreement with the country he had once called an 'evil empire.'" ¹⁹¹ Shultz remembered that in one of his meetings with Gorbachev after the Reykjavik summit, Gorbachev asked him directly whether the US would sign an INF agreement with 100 missiles left on each side, even though they preferred zero. Shultz had answered yes, and in recounting this meeting later, Shultz said that he felt this comment had been very important to Gorbachev because to him it meant that, "it is possible to conclude something." ¹⁹² Documents from the Soviet side support Shultz's understanding that the USSR was looking for some sign of flexibility in order to judge US intent. A memo prepared for Gorbachev ahead of his April 1987 meetings with Shultz states that, if in the course of negotiations with Shultz it was confirmed that the White house would be willing to sign a treaty, then the USSR could agree to speed up negotiations on INF, offer the delegation to meet constantly, and start work on the procedural questions on INF. ¹⁹³

¹⁹¹Shultz, *Turmoil and Triumph: Diplomacy, Power, and the Victory of the American Ideal*, see n. 53, 766.

¹⁹²George Shultz, interview with Don Oberdorfer, July 11, 1989, Don Oberdorfer Papers, Box 2, Folders 2-3.

¹⁹³Paraphrased translation from Russian by the author. Resolution of the CPSU Central Committee, "On our further tactical line relating to negotiations with the United States on the questions of nuclear and space armaments," Feb. 26, 1987, Vitalii Leonidovich Kataev Papers 1966-1999, Box 5, Folder 24.

Accounts from Soviet leaders also echo the sense that Gorbachev was looking for signs that US partners were “ready to deal with him.”¹⁹⁴ It is important to remember what while the US feared Soviet cheating and intransigence on arms control, leaders in the USSR saw President Reagan as highly ideological, committed to stereotyped views of the Soviet Union, and stubborn in his positions. The interactions with Reagan in Geneva and Reykjavik in particular suggested to Soviet leaders that, “it’s possible to talk with him, possible to convince him of something.”¹⁹⁵ Finally, in a recent interview, Gorbachev’s long-time interpreter Pavel Palazhchenko said that Gorbachev could have made additional concessions at Reykjavik, namely “untying” the INF from a package deal that would also include agreement on SDI and START. According to Palazhchenko, Gorbachev did not take this step because he wanted to first see what kind of reaction his proposal would provoke from Europe and the West, or essentially how seriously they took his call for nuclear disarmament.¹⁹⁶ The parallel between Soviet views of Reagan and US view of Reagan is striking, as both started to see the other as less adamantly committed to all out competition.

Although there was no leadership change in the US, the Soviet Union did observe the increase in domestic political pressure faced by the Reagan administration in its second term. In November 1986, the Republicans lost the Senate majority, and several weeks after the Iran-Contras scandal fully unfolded. Reagan’s domestic popularity declined as a result.¹⁹⁷ Observing these events led to greater uncertainty on the Soviet side about US intentions; the anti-Soviet President seemed increasingly under fire domestically, which could be a possibility for more cooperative incentives. In a memo for Gorbachev, his senior advisor Vitalii Kataev assessed the US domestic situation after the Reykjavik summit. Kataev observed

¹⁹⁴Primakov, see n. 176.

¹⁹⁵Yakovlev, see n. 38.

¹⁹⁶Pavel Palazhchenko, former interpreter for Mikhail Gorbachev and Eduard Shevardnadze, interview with the author, Moscow, Russian Federation, June 10, 2013.

¹⁹⁷Hoffman, see n. 136, 273-274.

that Reagan's popularity was declining at home, as was the trust of NATO allies. Reagan was in a "serious position," and the administration faced internal problems including the Iran-Contra scandal. Reagan had made the November 1986 mid-term elections a referendum on his policies and had suffered a defeat. With Republicans losing the Senate, the administration would have to be less aggressive in its approach. The "move to the right" that Reagan had been pursuing in his presidency may be ending. In connection with this assessment, Kataev observed that Reagan had made arms control central, and that this was something that could help him gain support at home and abroad. The comment implied that Reagan might be looking for arms control options given the criticisms he was facing.¹⁹⁸

At the same time, Gorbachev was concerned that the Iran-Contra scandal could contribute to backsliding by Reagan on other security issues or engaging "a risky venture" abroad. Speaking to the Politburo on December 1, 1986, Gorbachev repeatedly brought up "Irangate" and cautioned, "We are dealing with political scum. One can expect anything from them."¹⁹⁹ The combination of Gorbachev's attention to US domestic pressures and Kataev's detailed assessment of the implications for US foreign policy provides an important indication of increased uncertainty about US incentives. Although evidence of a direct connection to changes in Soviet arms control policy is not clear in the limited archival record, it is notable that Gorbachev's move to "untie the package" and allow for separate negotiations on INF happens shortly after this increase in uncertainty.²⁰⁰

¹⁹⁸Paraphrased from Russian by the author. "Evaluation of the military-political situation," Dec. 18, 1986, Vitalii Leonidovich Kataev Papers 1966–1999, Box 4, Folder 15.

¹⁹⁹Gorbachev's quote is from Anatoly Chernyaev's notes of the Politburo session, available in at:Anatoly Chernyaev, "Notes from the Conference with Politburo Members and Secretaries of the Central Committee," Dec. 1, 1986, Translated by Svetlana Savranskaya, National Security Archive Electronic Briefing Book No. 203, doc28, Archive of the Gorbachev Foundation. The Soviet leadership response to the Iran-Contras scandal and new pressure on Reagan is also noted in Hoffman, see n. 136, 275.

²⁰⁰The evidence on Soviet views of domestic volatility in the US is limited, so the extent of the effect on Soviet arms control positions is difficult to judge. The available historical record does suggest the connection, but additional materials – such as documents held by the Ministry of Foreign Affairs, whose archives for this period remain closed – would be needed for a stronger analysis.

4.5.3 Treaty Alternatives

To what extent was high monitoring the only agreement form being even considered by US policy and Soviet policymakers? While a high monitoring treaty clearly appears as their top preference for INF, US policymakers also considered other possibilities for both INF and a number of other arms control issues being discussed at the same time. The Soviet Union also routinely suggested options at lower levels of information exchange, though again they likewise ultimately preferred the higher verification options.

A review of Security Council Meeting minutes from 1983 to 1988 reveals the variation of agreement forms that were considered at the time, including framework agreements, interim agreements, and fully verifiable treaties. Notably, these options are presented at the highest policy-making level, and in almost all cases the President, Secretaries of State and Defense, and head of the CIA weighed in with their thoughts.²⁰¹

“Framework agreements” were broad scope agreements to lay out rules of the road or terms of mutual understanding and goals. These types of agreements would not include verification procedures. The possibilities of this kind of agreement was raised in the context of both START and INF, mostly with senior NSC officials agreeing that they did not want to go this route. A similar concept was the “interim agreement,” which would establish limits for a certain time frame, again with no verification measures. There is some discussion in the historical record on whether there should be interim agreements for START, and to a lesser extent INF.²⁰²

²⁰¹In some cases it appears clear that options were clarified and considered at a lower level, with the top option for each issue area being discussed in the meeting. However, in some cases, attachments to meetings or comments reveal a broader range of options, and officials also at times mention largely rejected options that they still oppose. Several indicative NSC minutes are cited in this section.

²⁰²An interim option was also discussed in the context of an ASAT moratorium. It would be a quick agreement which would lead to a follow on agreement (although it is not clear when such a follow would be possible). Such an agreement would not have any verification measures but US officials were still considering it as something that would bind them into certain behaviors. NSPG 96: Next-Steps in the Vienna Process, September 18, 1984. National Security Planning Group, “Next-Steps in the Vienna

The expectation was that interim agreements would be followed by a more developed treaty, but documents show a recognition among policymakers that this was not always the case, and interim could end up becoming, at least for some time, an alternative to the full agreement. Defense Secretary Weinberger voiced this not-so interim possibility as important critique of interim agreements, suggesting that this is a type of agreement that creates a period where there is no verifiability to hold the USSR accountable while at the same time the US would be more accountable due to Congressional pressures and domestic oversight.²⁰³ Paul Nitze likewise criticized interim agreements with the Soviets on either START or INF, saying, “I am a skeptic on interim agreements. They are all poison. If you want a useful agreement, don’t go down the interim agreement path.”²⁰⁴

The USSR seemed to favor interim types of agreements that likely would not be interim, but would rely on the US being bound by domestic oversight of the democratic process – for example the USSR proposed restraints on SDI without demand for verification.²⁰⁵ Similarly, even as intrusive verification procedures were being negotiated for INF, an intelligence memo noted that in the context of START, “The most frequent Soviet proposal has been for a ‘framework’ or ‘Valdivostok-like’ agreement on future limits for strategic offensive and defensive weapons” and that Gorbachev would prioritize getting an agreement signed quickly.²⁰⁶

Process,” see n. 54.

²⁰³National Security Planning Group, “Next-Steps in the Vienna Process,” see n. 54.

²⁰⁴Ibid.

²⁰⁵US Department of State, “The Secretary’s Meeting with Soviet Foreign Minister Shevardnadze,” see n. 133.

²⁰⁶Central Intelligence Agency, “Gorbachev’s Current Summit Calculations,” see n. 146 The Soviet interest in framework or Vladivostok-like agreements (having only general limits and no verification provisions) was also apparent prior to the acceptance of inspections in INF negotiations, as it was noted in a 1985 intelligence memo assessing Gorbachev’s preferences on arms control. US Department of State Intelligence and Research, “Soviet Motivations for a Quick-Fix Arms Control Agreement,” July 25, 1985, Understanding the End of the Cold War Reagan/Gorbachev Years, An Oral History Conference (documents collections), Brown University.

Finally, US officials discussed detailed verifiable agreements, which featured both arms limitations and data exchange and most importantly on-site inspections. These types of agreements had been discussed in the US before the 1980s, but they had not been agreed to by the USSR.²⁰⁷ NSC meeting notes show a clear preference in the early 1980s for treaties with verification, and a critique of prior agreements such as SALT II that lacked these features. However, the fact that framework and interim agreements were discussed in NSC meetings suggests that these concepts were not discarded as simply illogical or unacceptable at lower bureaucratic levels, and that they were at least possible enough to warrant senior level commentary.

The evidence presented in this section shows support for hypotheses 3 and 4 laid on the expected observations of changes in the INF positions or both adversaries. First, the US shifted its proposals for the verification regime. US demands for inspections were scaled back in order to make the measures more likely to be accepted by the USSR, and even more importantly, to make them acceptable to the US itself. Decisions on what level of verification to accept were made at the highest level, and were seen as critical in getting to a final agreement on INF. From the Soviet side, Gorbachev and his advisors reevaluated the gains that the USSR would have both from long term cooperation and from intrusive information exchange specifically. This point indicates that changes in Soviet thinking did play a role in the formation of the treaty.²⁰⁸ However, the USSR also observed important

²⁰⁷A related agreement form, confidence building measures, suggested that it would be possible to do the data exchange and inspections elements first to demonstrate and reassure on the process, which would pave the way for verifiable treaties with new limitations. CBMS were considered for conventional arms limits in Europe, and for the Hotlines Agreement between the US and USSR both around the same time frame of the mid-1980s.

²⁰⁸It does not appear to be the case though that Gorbachev saw advantages to openness in the military sphere in quite the same way as openness was applied in the domestic concepts of perestroika. In the context of arms control, allowing for greater information access had a more specific strategic role. Gorbachev was less concerned about being caught cheating, because he intended to limited the military-industrial complex and scale back defense. At the same time, Soviet leaders began to see the advantages of getting information

indications from both senior US officials and US domestic politics that suggested a possibility that the US, despite its anti-Soviet rhetoric, was also willing to comply with serious restraints.

4.6 Considering the alternative explanations

How does the INF story presented in this chapter fare against other possibly explanations for why the treaty came about, and how both sides agreed to its highly intrusive form? I have argued that the uncertainty created by domestic political shifts was the key reason why two adversaries, which started from a point of strong beliefs about the opponent's competitive intentions, went from a period of stalemate in arms control to a serious negotiation with a highly monitored treaty as the outcome. There are least three compelling alternative explanations, which come from either historical accounts of the INF specifically, or from other theoretical approaches which could be applied to the INF case: 1) power transition and the decline of the USSR explains the concessions that Gorbachev made to allow the INF treaty to happen; 2) Gorbachev's "new thinking" and the infusion of new ideas into the Soviet system changed Soviet views about cooperation with the west; and 3) experience and socialization allowed for greater trust and acceptance of a treaty with high information provisions. The findings in this chapter show however that that the first two approaches characterize relevant underlying trends but offer a significantly incomplete perspective of the INF as a negotiated security institution. I find even less support for the socialization argument; while this approach is might be best characterized by incrementalism and stability in an established relationship, I find that the INF is rather a change from prior practice coming about at a time of political turbulence and uncertainty in expectations.

about US capabilities, especially because it was becoming clear that the US was more advanced. Though it is difficult to fully differentiate, it is perhaps useful to think of the shift in attitudes towards verification as less of an ideological change and more of a reassessment of the costs and benefits of information.

Relative Power and Bargaining from Strength

Another alternative explanation suggests that the USSR made concession to the US in order to avoid continuing military competition with the US that they could no longer afford. Wohlforth and Brooks (2000/2001) argue that domestic economic pressure led to the identity change in the USSR, which in turn led to a new foreign policy. They make this argument about the end of the Cold War in general, so the INF could by implication be one of those kinds of concessions.²⁰⁹ The Soviet capability to continue the arms race was highly limited by material factors, so much so that even hardliners supported reductions in defense spending. The INF was merely the first step in a series of compromises on the security side that the USSR had to make in order to lower its spending on defense. According to this logic, the INF's intrusive verification provisions are a case of the USSR giving into US terms in order to get an agreement signed.²¹⁰ This view suggests that the success in arms control negotiations came from "bargaining from strength" and the US was able to hold on to and achieve its preferred position because the status quo was simply intolerable for the USSR.

While it is reasonable to expect that a high disparity in relative power would be a key driver in some arms control cases, it does not apply well to the INF case, which indicates that there is more to the story of agreement formation than power dynamics. As shown in this chapter, while Soviet military and economic power was indeed in decline, it was not at the level at which the USSR would fail to compete in the immediate term nor was it the case that they would choose not to do so for matters of serious security concern. The competition problem may have existed for SDI, but by 1987 some technical experts had begun to convince

²⁰⁹Stephen G. Brooks and William C. Wohlforth, "Power, Globalization, and the End of the Cold War," *International Security* 25, no. 3 (Winter 2000): 5–53; William C. Wohlforth, "Realism and the End of the Cold War," *International Security* 19, no. 3 (Winter 1994–1995): 91–129.

²¹⁰In a brief mention of the INF example, Betts (1992) relies on a highly simplified view of the INF and claims that its provisions for asymmetrical reductions are also a clear sign that the USSR "surrendered in arms control negotiations." Richard K Betts, "Systems for Peace or Causes of War? Collective Security, Arms Control, and the New Europe," *International Security* 17, no. 1 (Summer 1992): 5–43.

Gorbachev that US plans were unlikely to work and that an asymmetric and far cheaper response would be an option.²¹¹

The evidence also suggests that Soviet response to increased US power could possibly have been at least temporary military retrenchment rather than cooperation.²¹² In response to Reagan's speeches, some Soviet leaders believed that the USSR needed a massive crash program to build their own missile defense. For some like Soviet Defense Minister Ustinov, US policies were a reason to keep building up the military at all costs.²¹³

Declassified intelligence documents also show that regardless of how scholars might interpret the degree of Soviet decline in retrospect, at the time the US policymakers also saw that even though the Soviet Union was over extended in defense spending, it could have retrenched or cut resources from other areas for the sake of being able to at least keep up. Given the priority accorded to defense issues in the USSR, it was not unreasonable to expect that the Soviet Union would maintain military capabilities, including on INF, as long as possible rather than compromising them in favor of economic development. In the case of the INF specifically, the military and resource commitment was already in place on the Soviet side before the treaty became an option. The USSR deployed the SS-20 in the early 1980s, and was continuing to deploy missiles already in production.

It is also difficult to attribute the INF to the US relative power and advantageous bargaining position because this situation did not change considerably between the first and second period of INF negotiations.²¹⁴ The specific US military advances that the USSR found

²¹¹Brown, see n. 105, 235.

²¹²Brooks and Wohlforth (2000/2001) disagree on the extent to which retrenchment was possible, and argue that the situation widely seen as quite dire.

²¹³Brown, see n. 105, 228.

²¹⁴Risse-Kappen (1991) makes a similar point in arguing against the bargaining from strength explanation, but he focuses on the lack of change in the US bargaining position rather than just its power advantage over the USSR. This chapter makes a somewhat different point than Risse-Kappen's and argues that the US bargaining position did have to become more flexible for the treaty to be realized. So while the balance between the US and the USSR in military advantage and defense spending does not change,

so threatening and difficult to compete with were already present in the first negotiations period. The announcement of SDI was made early in Reagan's first term and the US did not make any real progress in SDI development over the course of the next few years. If anything, doubts about the viability of SDI increased rather than decreased over time. The plan for Pershing II deployments was also established in the first period, and as shown earlier in the Chapter, the USSR understood fairly well that the US would carry it out. Importantly, it was also not the case that the pressure from US security advantage was itself the reason that motivated the USSR to seek a more cooperatively oriented leader. Gorbachev came to power through domestic channels, and the powerful figures who championed his rise, including hardliners such as Ustinov and Gromyko, would not have supported the foreign policy shifts Gorbachev later pursued.²¹⁵

Ideas and New Thinking in the USSR

Another line of thought attributes numerous changes in US-Soviet relations in the 1980s to the "new thinking" in the Soviet Union which heralded the adoption of new foreign policies. There are two approaches to the idea-based explanation, though both see the change in leadership as key means by which new ideas were realized. Some scholars focus more on Gorbachev himself as having different beliefs and being the key factor in policy change,²¹⁶ while others focus more on the role of the ideas themselves (which were also developing in a number of intellectual circles at the time) and their use within the political system rather than Gorbachev's individual agency.²¹⁷

their positions on what is acceptable in a cooperation agreement do. Thomas Risse-Kappen, "Did Peace Through Strength End the Cold War? Lessons from INF," *International Security* (1991): 162–188.

²¹⁵Brown, see n. 105, 228.

²¹⁶Brown, see n. 105; Grachev, see n. 37.

²¹⁷Risse-Kappen, see n. 214; Matthew Evangelista, "The Paradox of State Strength: Transnational Relations, Domestic Structures, and Security Policy in Russia and the Soviet Union," *International Organization* 49 (1995): 1–38.

Proponents of the individual beliefs explanation argue that Gorbachev and his key advisors were primarily responsible for the new detente with the West and for the adoption of international cooperation measures such as the INF. The new thinking was largely the product of the experiences and greater contacts with the West that those close to Gorbachev had cultivated and the senior leaders' own openness to hearing ideas not from those experts and thinkers outside the Soviet power structure. Gorbachev's rise to power both brought his own ideas to the forefront, and also opened the door for ideas that had been building among intellectual communities but would have not reached the policy sphere without Gorbachev.²¹⁸ From this point of view, the key variable is Gorbachev's own innovative thinking, which is then responsible for both the changes in Soviet foreign policy positions and Gorbachev's creation of a cadre of supporters in the upper leadership who would then support these changes.²¹⁹

Other scholars focus more on the new ideas that became part of Soviet policy. Risse-Kappen argues that the INF was the first step in a foreign policy that reflected a different view of the role of military buildup in the Soviet economic system and a different approach to openness both in society and in terms of military secrecy. The new thinkers coming into power believed that the SS-20 missiles had been a mistake that created a counter-reaction from the West and without that new thinking on INF, military or economic decline would not have been sufficient for a treaty to come about.²²⁰ Mathew Evangelista argues that transnational actors were allies of domestic new thinkers and provided influence and resources for internal Soviet debates. Domestic structural change in the USSR – including greater decentralization in decision making and the reemergence of civil society – was the

²¹⁸Robert D English, *Russia and the Idea of the West: Gorbachev, Intellectuals, and the End of the Cold War* (New York, NY: Columbia University Press, 2013).

²¹⁹Brown, see n. 105, 226–230.

²²⁰Risse-Kappen, see n. 214.

intervening variable that made it possible for the pressure of new ideas to translate into changes in foreign policy.²²¹ On security issues, the changes in political structure allowed experts who, for example, questioned the threat posed by SDI and the need for Soviet response, to have greater influence on high level policymakers, including Gorbachev.

These ideas-based approaches highlight the possible sources of new foreign policy positions in the USSR, but they are incomplete as explanations for a successfully negotiated treaty or the form of that treaty. These theories overstate the influence of new thinking on early decisions in the security sphere within the USSR, and also fail to account for treaty outcomes as bargains between two sides. The INF was one of the first foreign policy decisions under Gorbachev, so whatever new ideas Gorbachev and his allies may have had, they were just becoming consolidated as policies during INF negotiations. Gorbachev also came across considerable opposition from the military and the military-industrial complex. Some of Gorbachev's appointees and those in charge of key elements of the INF, including Akhromeyev, were not supporters of the kinds of defense concessions that Gorbachev had in mind. The access of outside experts to policy making, which some of the scholars identify as critical to the effects of the new thinking, was just starting when the INF negotiations were going on, and on arms control issues was also limited to a few key individuals. So more than new ideas, the changes in Soviet foreign policy positions on arms control might be attributed to clever maneuvering between political views, and particularly efforts to reduce the influence of the military industrial complex.

Even if ideas – either on an personal level or at the level of broader societal changes – were effectively and quickly changing Soviet security policy, the US did not perceive this change, and as documented in this chapter had strong doubt about whether such change was possible. Gorbachev was just starting to speak publicly about his ideas of peaceful

²²¹Evangelista, see n. 217.

coexistence and “reasonable sufficiency” in arms in the Fall of 1985 as arms control talks were also getting going,²²² and the West had no reason at that point to interpret these statements as anything more than propaganda, and even just “old propaganda in new packaging.”²²³ From the point of view of treaty bargaining, the US was concerned that it would agree to a treaty, and then have to deal with the same type of Soviet opponent as before, one that was seeking short-term gains in competition and would be likely to cheat on cooperation. There was no clarity and no assurance at the time that the INF was being negotiated that the new thinking, even if claimed to be different, was actually going to lead to different behavior by the USSR. In other words, the fact that Gorbachev did have new ideas about foreign policy or that new ideas in general were gaining new traction in the Soviet political system was clearly important in changing the internal Soviet position on INF. But as noted earlier the chapter, this perspective helps explain why the USSR was more willing to accept treaty provisions it had previously rejected and not why the US was likewise more willing to seek cooperation in the second negotiations period.

The INF treaty as a reassurance signal

In somewhat different argument that also incorporates power relationships and identity change, Andrew Kydd explains the INF treaty as one of several signals that the Soviet Union made to reassure the US of its peaceful and cooperative intentions.²²⁴ Kydd also recognizes that there was a belief change in the USSR which contributed to more cooperative intentions, and underlying economic pressure which increased material constraints. The USSR sought to signal reassurance to the US, but in order to be credible, the signal had to be a costly one. According to Kydd, in an adversarial situation, the party that is less

²²²Oberdorfer, see n. 15, 141.

²²³National Security Council, “Visit of Soviet Foreign Minister Shevardnadze,” see n. 94.

²²⁴Andrew Kydd, *Trust and Mistrust in International Relations* (Princeton, NJ: Princeton University Press, 2005).

trusted by the other needs to make a greater concession in bargaining in order to effectively signal reassurance (in this case he claims the USSR trusted the US more than the US trusted the Soviets). So as a consequence of the Soviet desire to stop arms competition and signal this intent to the US, they signed a treaty which was a costly signal because of asymmetric concessions to the US.

Kydd's account is in some ways consistent with my explanation, particularly in noting that the US was skeptical of any real identity change on the part of the USSR. However, Kydd overemphasizes the INF treaty as a one-sided concession selected and made by USSR. While the US destroyed a fewer number of missiles than the USSR, the US capabilities were a larger threat for the Soviet Union than visa-versa. Removing the Pershing II missiles was a top Soviet priority, so it achieved this benefit from the treaty as well. Gorbachev wanted to convince Reagan and the rest of the world of the USSR's goals for long term cooperation, but he was also skeptical that the US likewise sought cooperation. He was also concerned with maintaining both long term Soviet security and support from the defense sector for his policies. Most importantly, Kydd's view of the INF does not account for the changes in positions on both sides. The ultimate form of the treaty put both sides in a position of taking a guarded risk in cooperating with the other. The INF may have had some signaling effect and played a role in changing US views of the Soviet Union.²²⁵ However, the evidence does not support a claim that signaling was the main role of the treaty. Rather, it was a institution designed with specific provisions to allow two adversaries to attain the benefits from mutual security restraint despite ongoing concern about each other's intentions.

²²⁵Even Kydd notes that the effects on US beliefs were mixed, and some leaders in the US continued to be highly skeptical of Soviet intentions. In fact, at the time some strongly criticized Reagan for having made the bigger concession. The May 1987 issue of the *National Review* was titled, "Reagan's Suicide Pact." In December 1987, influential conservative columnist George Will wrote, "The Soviets want victories; we want agreements." In the article, he criticized the treaty as playing into the USSR's long term strategic intention to weaken NATO and maintaining Soviet conventional superiority. George Will, "Potential Calamity Through Asymmetry Will Inf Treaty Make Europe Safe Again For Conventional War?" *The Philadelphia Inquirer*, December 07, 1987.

Learning and socialization thought incremental steps

Arms control policy experts often suggest that deep cooperation –both in terms of serious reduction of military capabilities and in the intrusiveness of measures to observe compliance– comes after periods of incremental trust-building or high degrees of stability in the relationship. There are actually two possible logics that motivate this incrementalist view. First, from a rational belief updating standpoint, the process of incremental cooperation could reveal information about both the adversary and about certain information provisions themselves which then makes states more likely to sign future agreements. If the adversary can demonstrate compliance with low level measures, this suggests interest in cooperating. Additionally, when certain measures are implemented, states become accustomed to their implementation and may reevaluate the costs associated with such tools. Second, from the point of view of socialization, states develop common practices and mutual understandings about appropriate cooperation tools, such as contacts between working level inspections teams or regular notification exchanges. With an accepted practice in place, they become increasingly likely to include similar provisions and even further develop these methods in future cooperation.

While it is possible that in some cases incremental steps may make it clearer that an adversary does have incentives to cooperate, or create commonly accepted practices around information exchange, the INF case shows that this is by no means the only way to achieve highly intrusive treaties. Rather than as a way to learn about the opponent's incentives, incremental measures can also be seen as inadequate for addressing security threats under highly threatening conditions, and even worse as a way that an opponent might give the semblance of cooperation while stalling on and ultimately avoiding adopting more significant restraints. Prior to the INF, the US and Soviet Union had signed several low monitoring agreements. However, the Soviet Union had a mixed record of compliance. During the period of the INF treaty, policymakers saw low monitoring agreements as, in a sense, not informative

enough about Soviet intentions. Soviet compliance with low monitoring agreements could just be effective deception rather than a sign of cooperation incentives. The INF experience suggests that when states have very strong beliefs that their opponents are likely to cheat, trust building steps that do not include intrusive information exchange are not seen as effective ways to really check the adversary's propensity to cheat. In the INF case, beliefs did not change because of evidence that the USSR was complying with less ambitious limits on armaments. Rather, the US view became less certain due to Soviet domestic political factors. The two states were able to conclude a treaty with serious military reductions and intrusive information exchange without prior trust building steps

The US and USSR were also engaged in very few, if any, trust-building activities on the eve of the INF treaty, which implies that there was little in the way of prior knowledge or socialization around common information exchange practices. In a possible attempt to appear cooperative in the first period of negotiations, the Soviet side introduced ideas for confidence building measures, including notifications for missile launches and aircraft take-offs. However, the Soviet delegation then refused to actually negotiate and establish such measures.²²⁶ Likewise, when the US raised proposals on a variety of confidence building measures with low levels of information exchange at the Geneva Summit (including observers at military exercises, communication channels, notifications, and meetings of senior advisors), the USSR interpreted these as an attempt by the US to distract from the intransigence in their position on INF and strategic arms control.²²⁷ Some of the more well known confidence building measures between the US and the USSR, such as the Nuclear Risk Reduction Centers, were being negotiated concurrently with the INF, not as tools to build the trust necessary for a bigger treaty down the line. Further, though other CBMs with relatively

²²⁶Maynard W Glitman, *The Last Battle of the Cold War: An Inside Account of Negotiating the Intermediate Range Nuclear Forces Treaty* (New York, NY: Palgrave Macmillan, 2006), 87.

²²⁷Garthoff, see n. 160, 217.

high levels of information exchange were being negotiated at the time, it is not the case that the two sides tried less intrusive methods first to build trust. Efforts to negotiate confidence building measures in the conventional weapons sphere at the Conference on Security and Cooperation in Europe (CSCE) also ran into difficulties in the early 1980s.²²⁸ These were only resolved at about the same time as the INF, and likewise eventually took the form of having more intrusive information sharing tools than had been previously used.

Finally, while new information exchange tools are surely not easy to design, the INF case demonstrates how quickly new and highly intrusive measures can be developed without much prior common experience. During the negotiations, experts routinely came up with creative and unprecedented ways to verify elements of the treaty provisions. A prior template of inspections methods may have made their work easier, but not having it did not stop the two sides from designing specific solutions at the level of information exchange both were willing to accept. Interestingly, many former participants of the INF negotiations also highlight how much change there was in Soviet common practice in the second period of negotiations, including a switch to simultaneous translation, the inclusion of more technical experts, and a more direct negotiating style.²²⁹ Rather than building on the norms that had already developed in years of bilateral negotiations, the INF negotiations established new patterns of interaction.

4.7 Conclusion

The ultimate agreement on an INF treaty was a surprise to many observers at the time. Reagan was not a president who was expected to forge new arms control agreements with

²²⁸Glitman, *The Last Battle of the Cold War: An Inside Account of Negotiating the Intermediate Range Nuclear Forces Treaty*, see n. 226, 104.

²²⁹Impressions are from the author's interviews with several treaty negotiators on the US side, including those who participated in Geneva and those who attended higher level summits.

the USSR, and at the same time, there were few expectations that the Soviet Union would accept such high levels of restraint. The INF is a good case for analysis because the outcome was far from predetermined. It is an agreement between two states that had very little trust in one another, and for whom competition dominated almost every sphere of interaction. The evidence presented in this chapter supports the theory hypotheses for cooperation outcomes under different time periods of negotiation, as well as on the change that takes the adversaries from one outcome condition into the next.

In the INF case the change in the outcome – from no agreement to a highly intrusive treaty – happened quite quickly, making it hard to attribute the treaty to any broader shifts in power or political systems. The first case of no agreement is best explained by strong beliefs on both sides that the other was seeking short-term military advantages. The kinds of treaty monitoring provisions that would be needed to catch or deter strongly motivated attempts to circumvent the treaty were far too costly for either side to accept. Because such tools are necessarily imperfect, any treaty signed would still face a high risk of the opponent trying to evade by whatever means it could. In the second period of negotiations however, both sides see new reasons to doubt previously held suspicions of the adversary's motives. The USSR had not suddenly become a friendly ally from the US perspective, but there is a chance that the Soviets saw advantages to longer-term cooperation and would not be trying to cheat at every turn. This new uncertainty about Soviet incentives created an opportunity for cooperation. The risk of being taken advantage of became worthwhile with the possibility that long-term cooperation could actually be maintained. At the same time, Soviet calculations shifted for other reasons, which were difficult for the US to fully perceive. The USSR began to see new advantages in longer-term cooperation, reassess the costs of verification, and most importantly, see signs of flexibility and real interest in cooperation from the US.

What precipitated this change in beliefs away from firm antagonism and towards

greater uncertainty? I have argued in this chapter that the domestic political volatility in the USSR, including both changes in the leader himself and in numerous foreign policy positions, motivated the US policymakers to reassess their expectations of the USSR. It was not the case that Gorbachev was clearly seen as more likely to cooperate. The intelligence community and policymakers did not know what to make of the Soviet political shift – the new leadership could very well just bring more of the same, but there was also a new possibility that they would pursue new security policy. As a result, the US became willing to revise its negotiating positions on key INF provisions – the verification regime – to a more moderate range where it was more likely to be accepted. It is also interesting to note that it is not the case that the INF emerged after the uncertainty about the USSR was largely resolved. Even in 1988, after the INF was signed and moving into implementation, the US intelligence community still estimated that there was a possibility that US-Soviet relations would deteriorate and Soviet defense spending would again increase, even at the cost of Gorbachev's economic reforms.²³⁰

Most accounts in historical work, memoirs, and interviews agree that Gorbachev and the leadership in the USSR change matters during this period, but they are either not precise about what the change actually did or disagree on the effect it has on precipitating the specific outcome that we observe with the INF treaty. The theory developed in this project looks at this same domestic political change from a new angle and assesses how it affects the beliefs and incentives on each side and how this in turn leads to changes in bargaining positions. As discussed in the assessment of alternative explanations, viewing the political change as only having effects on the Soviet position provides an incomplete explanation of the treaty.

²³⁰Making a similar point about the lack of a fundamental change in US suspicions of the USSR, David Hoffman also cites a November 1987 Defense Intelligence Report to Congress which stated that, “all evidence points to continuity in the Soviet Union's military policy.” Hoffman, see n. 136, 294.

In contemporary accounts, the INF appears as the treaty that the USSR had to acquiesce to on US terms because they were so threatened that they had no other options. However, this chapter has shown that the treaty came from changes in beliefs and bargaining positions on both sides. It also represented a considerable risk for both adversaries. Both sides saw benefits from cooperation, but also a potential to be taken advantage of by their adversary. The concerns have been more clearly documented on the US side, but were surprisingly strong in the USSR as well. The INF did not have universal support in the USSR at the time, and is not always looked upon favorably in retrospect by Russian experts today. The military in particular opposed the inspection and verification regime, and used the inspections regime as a way to question the treaty in general.²³¹ A former military official, who himself was a participant in the design of other arms control treaties, stated strongly in a recent interview that he thought that Gorbachev and Shevardnadze had given away too much to the West on INF, and had been too distracted by their desires for internal economic reforms to really understand the military implications of their concessions.²³² Interestingly, the Soviet military was afraid not that the inspections would reveal Soviet military capabilities and technology, but rather that they would show the lack of it and thereby expose the USSR's true weakness to the adversary.²³³ The INF did represent considerable concessions on the Soviet side, but these were not made without great hesitation and greater flexibility on the US side as well.

The trade-offs that policymakers considered as part of treaty are a close fit to a number of key assumptions made in the theory and accompanying model in Chapter 2, including the relative benefits of cooperation, the status quo, cheating on cooperation, as well as the

²³¹Grachev, see n. 37, 99.

²³²Evgeny Buzhinsky, Lieutenant-General (Retired), former Head of Department of the International Treaty Directorate of the Main Department of International Military Cooperation of the Russian Ministry of Defense, interview with the author, Moscow, Russian Federation, June 3, 2013.

²³³Grachev, see n. 37, 99.

costs of intrusive verification. For example, the opponents of arms control still saw that there would be gains to cooperation that would be higher than the status quo of continued arms competition. The problem was the expectation of being taken advantage of in cooperation. They thought that “the Soviets would outnegotiate us and then cheat.”²³⁴ Accepting cooperation, even with measures to observe compliance, involved making a compromise and taking a risk. George Shultz believed that the US could negotiate better, and catch them if they cheated, “But it meant we would have to compromise and have to realize that nothing is perfect or airtight.”²³⁵ Finally, the measures for catching cheating were clearly seen as costly – INF provisions for inspections would cost over 80 millions dollars in the first year alone and require considerable indirect costs to boost information collection capabilities.²³⁶ Even at a high level of intrusiveness, the kinds of information provisions that could actually be agreed upon in a treaty would be necessarily imperfect; a former negotiator recounts that, “there was a widespread assumption, at OSD and elsewhere, that the Soviets would never allow inspectors to see a violation, whatever the treaty provisions might say.”²³⁷ Measures that marginally improved the ability of states to detect violations came with exponentially higher costs, as was the case with “any time any where” inspections, an idea that was abandoned by both sides.

As a test of the theory, the INF case does not easily fit into characterizations such as an “easy case” or a “difficult case” – it is perhaps best seen as a critical case. If the logic of domestic change and its effects on uncertainty and agreement designs are to be observable in any case, the INF story is a key place to look. The extent of the adversarial relationship and the specific security competition with intermediate range missiles made the situation a

²³⁴Shultz, *Turmoil and Triumph: Diplomacy, Power, and the Victory of the American Ideal*, see n. 53, 503.

²³⁵*Ibid.*, 503.

²³⁶The full estimated costs of the inspection provisions (over the course of the thirteen years over which some were to be implemented) were about \$1 billion. Garthoff, see n. 160, 327.

²³⁷Harrison, see n. 162, 80.

very difficult case for cooperation. However, it is a key example of adversarial states still being able to participate in a security institution which restrains them, but also design it to include very costly information exchange provisions. Explaining how two adversaries went from no hope of cooperation to designing one of the most intrusive and ambitious treaties ever signed is puzzle that is often overlooked as just a part of the end of the Cold War, when in fact many of the changes associated with that shift really became apparent only after the INF was already in place. In contrast, the INF is an easy case for a number of the alternative explanations discussed, and demonstrating the flaws in their accounts requires a closer examination of the historical evidence.

The process-tracing approach used in this chapter for each period of negotiations shows strong indication of political volatility driving changes in beliefs, which in turn contributes to new negotiating positions and ultimately mutually acceptable agreement. Unsurprisingly, there are few “smoking guns” in this kind of historical research, but the evidence gives strong support for causal claims. For example, there is no senior official who explicitly stated that the uncertainty coming from observing Gorbachev had led him to propose a certain form of agreement with the Russians. Rather, what we do see is officials discussing their views of Gorbachev and then turning to INF proposals later in the same meeting. More importantly, the timing of INF treaty design choices lines up with changes in assessments of the USSR in other documents.

Finally, there are several features which make the INF case generalizable to other adversarial cooperation agreements. The highly adversarial conditions in the first period are similar to general cases of rivalries and ongoing arms races. The pairing of a democracy and an autocracy reflects many other treaties included in the full dataset of adversarial agreements. The INF case also features a situation of domestic political volatility that comes about through a relatively normal leadership succession in a country. Gorbachev does not come from a clear opposition party or take power through force. While there was some

indication at the time that Gorbachev was a different kind of Soviet leader, this assessment was far from certain. The case therefore suggests that similar windows of opportunity for highly intrusive security institutions can emerge from domestic changes that are less dramatic than the Soviet one later tuned out to be. In 2013 a possible agreement between Iran and the US on limiting Iran's nuclear program emerged as a surprisingly close parallel to the INF case, including with respect to strong prior expectations of incentives to cheat on both sides, a new Iranian leader coming to power whose policy agenda and ability to change policy is difficult to assess, and renewed negotiations towards a highly monitored agreement. As discussed in the next chapter, applying the theory and the supporting evidence of the INF case suggests that the leadership change in Iran has created conditions where the US and Iran are more likely to risk cooperation while securing their commitment with costly information provisions.

Chapter 5

Theory Applications: Uncertainty and Adversarial Cooperation in South Asia and the Middle East

5.1 Introduction

In contemporary US politics, the term arms control elicits images of Cold War competition and to a lesser extent recent efforts to reduce nuclear numbers between the US and Russia.¹ However, as a broader concept of adversarial agreements on restraint, arms control is a key feature of other types of treaties, including post-conflict peace agreements and efforts to restrain dangers below the strategic level. The results presented in Chapter 3 give strong support to the argument that domestic volatility and the uncertainty it creates has effects across a broad range of adversarial agreements. With the case study of the Intermediate Nuclear Forces Treaty in Chapter 4, I demonstrated support for the theory in the most

¹The most recent treaty commonly referred to as arms control was New START in 2010, which limits nuclear arsenals deployed by the US and Russia.

well known type of arms control agreement. However, to what extent does the causal logic suggested in the quantitative analysis and then traced in one type of historical case also apply to other kinds of cases?

In order to demonstrate the generalizability of the theory beyond the US-Soviet nuclear arms control context, this chapter presents evidence from three additional cases: the 1999 Lahore Declaration between India and Pakistan, the 1979 Peace Treaty between Egypt and Israel, and the negotiations between US and Iran in 2009 and 2013. The Lahore Declaration is an example of an ambitious confidence building measure, which calls on the states to pursue a number of mutually beneficial cooperation goals, establishes a few concrete steps to lower the risk of escalations (such as missile test notification agreements), but includes few information exchange provisions. The Egypt-Israel Peace Treaty, among its other provisions, created a limited force zone on both sides of the border in the Sinai Peninsula and includes provisions for highly intrusive verification of compliance with demilitarization rules. The US-Iran negotiations is a somewhat different kind of case in that it is still unfolding. The US and Iran have signed an agreement, that although temporary, places significant limitations on Iran's program and includes highly intrusive information provisions, including daily observations of key facilities.²

Each of the cases has important characteristics for effective case study comparisons, particularly the relative constancy of other likely treaty determinants across observed time periods. However, these cases also have significant intervening variables: US involvement as a mediator in the Egypt-Israel case, the nuclearization of conflict in the India-Pakistan case, and changes in capabilities in the Iran case. Separating the influence of these factors on treaty outcomes from the hypothesized effect of domestic volatility is difficult and not always

²For simplicity, I refer to the negotiations and the agreement as being between the Iran and the US. In reality, the US leads the group of P5+1 or EU3+3 states, which includes US, UK, France, Russia, China, and Germany. There are additional dynamics within the P5+1, including occasional disagreements about the position which should be proposed to Iran, but I do not focus on that element of the negotiations.

possible. However, I provide evidence that gives positive indication that deeper historical research on the cases would indeed support the theory predictions. While the necessary archival and interview evidence is lacking in these cases, due to restricted materials or difficult access, this chapter outlines the evidence that currently supports the theory predictions and identifies the kinds of material that would either support the theory or support alternative explanations when it becomes available.

These cases provide two types of comparisons – between different time periods within the same pair of adversarial states and across cases that occur in different regions and between different sets of adversaries. First, within case variation compares two time periods which are similar along key parameters, such as the relative power and technological capabilities, but vary on outcomes of whether we observe no treaties signed, treaties with low monitoring provisions, or treaties with high monitoring provisions. The within case comparison allows for theory testing in way that is similar to the approach used in Chapter 4 for the Intermediate Nuclear Forces Treaty. I hypothesize that if other possible determinants of treaty outcomes are relatively constant, a key difference between treaty outcomes across the two time periods should be the presence of domestic political volatility within one or both of the partner states. Further, I would expect that if political volatility has the expected effect on treaty forms, then we should be able to trace: 1) how top down or bottom up political shifts alter the foreign policy approaches of the state experiencing the volatility; 2) how an international adversary observes this volatility and becomes less certain about the state's foreign policy and cooperation incentives; 3) a connection between these new beliefs and the motivation to pursue a formal arms control agreement.

Second, comparison across cases can better demonstrate the role of states beliefs about one another's incentives on the type of treaty information provision we observe. For a given pair of states, the choice is often between no treaty and a treaty with some level of information provisions; a treaty without those provisions is usually the worst option and is

barely considered. However, across cases, some conditions appear similar on a number of parameters but we observe that different treaty forms are chosen in each. For example, India-Pakistan and Egypt-Israel are both cases of enduring rivalries which experienced repeated military confrontations, both involve contested territory and disputes over borders, and in both cases the US has played a strong role in applying pressure for cooperation. However, India and Pakistan pursued a low monitoring agreement with the Lahore Declaration, while the Peace Treaty between Egypt and Israel includes highly intrusive measures to monitor military force limitations along their border.

As I discuss in this chapter, a key difference between these first two cases is the space of mutual cooperative expectations that develops in a key area of the Indian-Pakistani relationship in the late 1990s, focused primarily on escalation restraint and avoiding unintentional conflict. India and Pakistan of course do not suddenly become trusted allies, but a detente between the two allows for the formation of fairly certain beliefs on cooperative intentions in a couple areas of their multifaceted and largely intractable rivalry. While both cases experience domestic volatility prior to an eventual formal agreement, Egypt and Israel negotiate from a baseline of intense mutual suspicion and expectations of cheating across all issues related to the agreement.

The Iran case allows me to apply the theory to a contemporary instance of adversarial cooperation. In the ongoing US-Iran negotiations to limit Iran's nuclear program, the evidence so far indicates preliminary support for the theory. Future revelations of case details, and of course ongoing developments, provide an important opportunity to test the theory further. I structure the case somewhat differently from the other two and focus on two periods where domestic political volatility contributed to a higher likelihood of an agreement. Both moments are preceded by high tensions and impasses in negotiations.

The chapter proceeds in five sections. First, the next section outlines how the argument can be generalized across the range of adversarial agreements and identifies why

these specific cases can best demonstrate that broader claim. Section 3 addresses the India-Pakistan case, focusing on conditions of the mid-1990s through the signing of the Lahore Declaration in 1999. Section 4 looks at the Egypt-Israel case, focusing on the transition between negotiations deadlock prior to 1977 and the steady though difficult path towards a treaty in the years afterward. Unlike the other cases, the Egypt-Israel case importantly highlights the role of the bottom up social unrest volatility as a driver of treaty outcomes. Section 5 develops the US-Iran case, looking at the nearly successful fuel swap proposal in fall 2009, and the signed Joint Plan of Action agreement in fall 2013. Section 6 concludes, highlighting some of the comparisons across cases.

5.2 Generalizability of the Argument

The goal of this chapter is to show the generalizability of my argument along three key dimensions: non-US/Russia rivals, conditions where cooperation is believed to be more likely than cheating, and conditions of post-conflict and conventional arms restraint rather than Cold War nuclear stand-off.

First, I argue that the relationship between domestic volatility, uncertainty in beliefs about the adversary, and treaty outcomes is not limited to the US-Russian context. The US and USSR/Russia have participated in more arms control treaties than any other pair of states. It could be the case that the logic which governs US-Russian interactions does not apply to other states because of a whole host of factors, including the global nature of their competition, their constant and repeated interactions, or even because of the nature of the ideological struggle between these two security giants. However, I hypothesize that domestic political shifts should have an effect on the beliefs of any kind of adversarial pair of states, regardless of their power, global position, or ideology. While there are surely some factors that are unique to the US-Russia relationship which contribute to the likelihood of

cooperation, these states' responses to political volatility and uncertainty is not unique. To support this argument, we need to look at patterns of non-cooperation and treaty types among other states. The best cases would be ones where the nature of the competition between the adversaries is regional and not a proxy of Cold War dynamics.

Second, the theory makes a conditional prediction about the effects of domestic volatility, so demonstrating the causal logic of both conditions would provide strong support for the argument. When states are relatively certain that the adversary has high incentive to cheat and is the "Competitor" type, increased uncertainty will make them more likely to pursue high monitoring agreements. This was the story of the INF treaty. However, when states are relatively certain that the adversary has strong incentives to comply and is the "Cooperator" type, increased uncertainty will make them more likely to pursue low monitoring agreements as a cheap hedge against the possibility that the informal cooperative behavior may change to competition. In the cases where we observe a cooperative relationship between adversaries, is there evidence to support this claim that low monitoring treaties emerge after increased uncertainty?

Table 5.1: Theory predictions

	Cooperative Types	Competitive Types
Stable	informal cooperation India-Pakistan late 1990s detente	no cooperation failed US-USSR negotiations (1981-1983) Egypt- Israel arms build up (1973-1977)
Volatile	low monitoring treaties India-Pakistan 1999 Lahore Declaration	high monitoring treaties US-USSR Intermediate Nu- clear Forces Treaty (1987) Egypt-Israel Peace Treaty (1979)

Because treaties are rare overall, for the purposes of a case study it is useful to look at an observed low monitoring case, and trace backwards to see whether the conditions that led to the treaty are consistent with treaty expectations. We would expect to see a period of detente with adversaries seeing each other as likely cooperators, informal cooperation activity between the two states, followed by domestic political volatility contributing to both sides agreeing to the low monitoring agreement. As with the high monitoring case study, observing this pattern in one case surely does not prove that the volatility factor is causal in all cases. Nor would we expect it to be, since its possible that other cases treaties still occur for other reasons, or that effects of uncertainty are very difficult to observe in particular cases. The link between volatility and treaty outcome was established in the statistical analysis, so the goal here is to test the plausibility of the argument's causal mechanism under both conditions where I would expect to observe it.

Finally, there are several underlying conditions in the INF case which set it apart from other types of adversarial cases, so it is important to show that the logic of the theory applies even when these characteristics are not present. During both periods of observation, the INF case includes two states with: approximate power parity, nuclear weapons, satellites and other advanced surveillance capabilities, and no recent history of direct armed conflict. Notably, these factors should also be familiar as control variables in the quantitative analysis. As with the statistical analysis, the goal here is to show that variation along these underlying conditions does not change the predicted effects of domestic political volatility on treaty outcomes. The within-case analysis of the INF cases holds these variables constant at a particular level, while the case studies have these factors at another. While states that are negotiating over post conflict territorial claims or states that bargain with far stronger adversaries face different specific challenges, these examples show that domestic political volatility is likely to affect treaty outcomes in similar ways across cases.

Additional research would be needed to provide more conclusive proof of the theory

in each of these scenarios, and for even broader generalizability, other scenarios may be of interest as well. A more complete list of conditions which could be used for theory testing includes: non US-Russia rivals, post-conflict situations, beliefs on low incentives to cheat, multilateral treaties, pre-WWII agreements, and territorial competition. However, as a starting point, this chapter presents evidence on the generalizability of the argument along the first three dimensions.

5.3 India, Pakistan, and the Lahore Declaration

India and Pakistan have been engaged in a security rivalry since their independence from British rule. Both states spend extensive resources on arms and military, and they also have an ongoing dispute over contested territory in Kashmir. The two states have pursued security agreements several times in their history, creating measures intended largely to mitigate the risks of unintentional conflict escalation. The arms control agreements India and Pakistan have concluded, however, have been both less numerous and less intrusive in information exchange than one might expect given the costs of ongoing competition. While Cold War adversaries US and Russia designed treaties with substantial force limits and verification regimes, India and Pakistan have taken much more modest steps, and their agreements – most of which are in the range of confidence building measures– include largely voluntary information reporting and not terms for the sides to directly observe or verify one another’s actions.

In February 1999 India and Pakistan signed the Lahore Declaration. The Declaration and the accompanying Memorandum of Understanding included several components; it recognized the states’ nuclear capabilities and commitment to nonproliferation and disarmament; noted the need for cooperation in several security areas; established confidence building measures (such as notifications on missile testing); and articulated a commitment

to resolve the Kashmir dispute. The agreement included low level information exchange provisions, primarily a commitment to ongoing consultations and providing notifications as part of the CBMs. There are no provisions for directly observing compliance with goals such as decreasing regional tensions or pursuing nonproliferation or disarmament steps.

The India-Pakistan case presents two useful comparisons for testing the theory. First, we can compare periods when agreements occur with periods where the adversaries barely negotiate. The comparison is between a no treaty outcome and a low monitoring treaty outcome, which means that a theory should also account for why we observe a form of agreement with minimal information provisions rather than one with highly intrusive features. Second, it is useful to compare the India-Pakistan case with another pair of adversaries which likewise experience repeated military conflict, an enduring rivalry, territorial disputes, and a cultural, religious, or ideological animosity. With these possible treaty determinants held constant, why do we see different treaty outcomes across cases? A comparison of the India-Pakistan dyad with the Israel-Egypt case discussed in the next section allows for a contrast not only between no treaty and treaty type outcomes, but also between treaty design options in cases where agreements do emerge. This comparison between agreement options is largely missing in the historical and policy literature on the India-Pakistan case, even though analysts jump to policy prescriptions for South Asia cooperation that draw explicitly from the European and Middle East experience.

Before turning to the details of the Lahore Declaration in the late 1990s, this section first presents the predictions of my theory applied to this case, as well as outlining several alternative explanations. I note the kind of evidence that would support or challenge each explanation.

5.3.1 Possible Explanations

Much of what has been written about India-Pakistan agreements summarizes what has been achieved, but does not consider why these agreements have emerged at particular times – despite constant encouragement by the US for greater cooperation efforts – and why the agreements have been of the low monitoring variety. Such articles often suggest possible CBMs that India and Pakistan could create, but do not hypothesize about why they have not done so previously, beyond a general recognition that the level of hostility in the rivalry makes negotiations difficult.³ Although it has not been clearly theorized, existing scholarship and historical accounts suggests several possible explanations for both the timing and form of agreements.

First, the theory developed in this project argues that security institutions between adversaries are, all else being equal, more likely to emerge during periods of heightened uncertainty about the opponent's cooperation incentives, with domestic political change within the adversary state being a key source of this uncertainty. In the South Asia context, the relationship is at a very high level of antagonism, but like the relations between other adversarial states it also oscillates between high hostility and relative detente. During periods of detente, India and Pakistan expect one another to at least avoid immediate or unintentional conflict escalation in favor of longer term stability. When expectations of cooperative behavior are high, India and Pakistan have few incentives to commit to formal security institutions. Agreements with low monitoring provisions might be explored, but on issues where there is mutual agreement about cooperation, the countries are likely to behave cooperatively

³Among examples of articles which review the purpose and content of CBMS in South Asia, see: Umbreen Javaid, "Confidence Building Measures in Nuclear South Asia: Limitations and Prospects," *South Asian Studies* 25, no. 2 (July 2010): 341–359; A.Z. Hilali, "Confidence- and Security-Building Measures for India and Pakistan," *Alternatives: Global, Local, Political* 30 (2005): 191–222; P. R. Chari, "Strategic stability in South Asia: the role of confidence-building and threat reduction measures," *Contemporary South Asia* 14, no. 2 (2005): 211–217; Moonis Ahmar, ed., *The Challenge of Confidence-Building in South Asia* (New Delhi, India: Har-Anand Publications, 2001).

without formal tools.

A change among senior leadership in either state calls this delicate cooperative understanding into question. Given the intensity of the India-Pakistan rivalry, a possible change from a detente is likely to be a change for the worse. The uncertainty generated by leadership change motivates the shift from an implicit cooperative approach to a formalized one through low monitoring agreements. India and Pakistan do not expect to really bind one another if the adversary chooses to violate and revert to open hostilities. Rather, low monitoring agreements are a way to secure cooperative activity with a new government that might be tempted to explore other options. The minimal information exchange provisions of such agreements can decrease the likelihood of misunderstandings that arise over minor aggressive moves that are not intended tests of the relationship rather than attempts to gain major strategic advantages. On the issues where cooperation and detente have developed, there is no need to jump to highly intrusive monitoring – at least some cooperative attitude is expected to continue even after the leadership shift, and compliance is still likely. At the same time, in contexts where cheating would be highly likely (such as on border troop deployments or missile reductions), the level of monitoring needed to catch such motivated violations would be prohibitively costly.

If this explanation for India-Pakistan low monitoring agreements is correct, we would expect to observe several characteristics between different periods of observation in the relationship. The first period would be expected to be relatively peaceful and cooperative in nature. There are few long term detente's in India and Pakistan's tumultuous history, but one would be expected in the lead up to an agreement. During the detente period, we would expect to observe some informal cooperation. Entering into the second period, the conditions of the relationship would be essentially the same, but we would expect to see a leadership change occur in one or both of the states, and for that leadership change to be observed with caution by the opponent. In interpreting the political shift, the opponent's

beliefs about the future of cooperation would be expected to become less certain. Observable indicators of such uncertainty could include divergent views emerging about the new leader's intentions, or public statements questioning the continuation of the adversary's past policies. Building out of this uncertainty, there should be a new push for formalizing cooperation with an agreement. High monitoring options are likely to be rejected in favor of low monitoring forms which are intended to build on prior areas of informal cooperation.

One of the most prevalent existing alternative explanations for formal agreements between India and Pakistan comes largely from the policy literature and focuses on the benefits of learning and socialization. The learning explanation has two variants. First, states like India and Pakistan are more likely to design more intrusive agreements if they learn the technical tools associated with such measures. These tools include both the legal mechanism developed by the US and Russia, such as consultative commissions or verification protocols, and technology elements such as communication systems. Some analysts have argued that if India and Pakistan could get more "expertise" they would be more likely to carry out monitoring and verification agreements in their region.⁴

The second variant suggests what is learned from the experience of engaging in arms control issues is a culture of cooperative confidence building. States – or perhaps even individual but influential actors within them – come to hold stronger beliefs about the efficacy of cooperative measures for addressing international security challenges, and become more likely to use these in the future. The claim is that the experience in Europe in the 1980s "spawned a culture for CBMs" both in Europe and in other countries.⁵ In both cases of learning explanations, exposure to or participation in arms control efforts designed by other states should make India and Pakistan more likely to employ similar tools. Indeed, this

⁴Nazir Kamal and Amit Gupta, *Prospects of Conventional Arm Control in South Asia* (Cooperative Monitoring Center, Sandia National Laboratory, 1998), 10.

⁵Aabha Dixit, "India-Pakistan: Are Commonly Accepted Confidence-Building Structures Relevant?" *Security Dialogue* 26, no. 2 (1995): 191–203.

transference of either culture or technical expertise would be expected to be well underway by the late 1990s – the time frame being considered in this case – as most of the “model” European measures were in place by the late 1980s. Additionally, the learning explanation – of either variety – was the operating belief among several NGO experts working on India-Pakistan security issues in the 1990s. American NGO experts held meetings with Indian and Pakistani experts on CBM tools, explicitly intending for these approaches to be learned and reapplied in South Asia.⁶

Another possible explanation for the variation in Indian-Pakistani agreements focuses on the role of heightened incentives for cooperation due to military crisis. A crisis brings about concerns over escalation and high costs of war to the forefront, which makes efforts at restraint more appealing. Without the fear of a crisis ending unfavorably or getting out of hand, India and Pakistan are unmotivated to seek cooperative solutions, and instead focus on trying to gain the upper hand through arms races and military means. Although none of the India-Pakistan conflicts have ended with a peace treaty that includes arms control provisions, a number of agreements have emerged immediately following military crises, such as the agreement on notifications of military exercises and air space violations which was signed after the 1990 Kashmir crisis.⁷ The Simla Agreement of 1972 was in response to the 1971, and the 2004 Islamabad accord was in response to the 2001-2002 military crises and Kashmir tensions.⁸

⁶The US Information Agency funded a program for South Asian researchers to visit US think tanks in the early 1990s. The Stimson Center also hosted fellows from India and Pakistan during the 1990s, with the goal of familiarizing senior officials and more junior regional strategists with, “the theory and practice of arms control, disarmament, nuclear risk reduction, and confidence-building measures.” (see the website of the Stimson Center, South Asia Visiting Fellows Program, for a full description). US scholars also hosted several workshops in the region on conflict resolution. The Center for Policy Research (with funding from the Ford Foundation) held a South Asian dialogue series in the region in 1992, and the United States Institutes of Peace held workshops with South Asian participants in Washington DC. For a good overview of these approaches, see: Sajjad Malik, “Track II Diplomacy and Its Impact on Pakistan India Peace Process,” *Studies, Institute of Strategic Studies Islamabad (ISSI)* XXXII, no. 1 (Spring 2012).

⁷Kamal and Gupta, see n. 4, 19.

⁸Feroz Hassan Khan, “Prospects for Indian and Pakistani Arms Control and Confidence Building Measures,”

If this logic applies to the Lahore Declaration as well, we would expect to see concerns heightened by recent crisis play a role in motivating states to pursue an agreement. The post-crisis explanation is not necessarily an alternative to my domestic volatility theory; both factors could contribute to the likelihood of agreements. To identify the necessity of the domestic volatility story in a particular case, it would be necessary to show that this factor provided an independent additional reason for cooperation, even if a crisis likewise contributed to the impetus for an agreement. A partial divergence in predictions is on agreement forms and impact of the crisis immediately prior to agreement. The post-crisis explanation suggests that intrusive agreements would be more likely when the costs of ongoing competition increase, such as following a major military action. If these costs increase, and states believe that a future military challenge could significantly change the military balance, we would expect states to also be willing to shoulder higher costs associated with the more intrusive verification needed to guarantee compliance. On the other hand, the domestic volatility explanation predicts low monitoring following detente periods. A crisis may further motivate low monitoring agreements if it is somewhat isolated, and does not immediately revert that detente into conflict. In contrast, the learning explanations imply a somewhat different observable pattern for formal security cooperation, with both frequency of agreements and their intrusiveness increasing over time in response to exposure to external treaty experience.

5.3.2 The mid-1990s and an emerging detente

In the mid 1990s violence was on the decline in Kashmir and there was a period of relative peace.⁹ The last major military dispute was the Brass Tacks exercise in 1987. There

Naval War College Review 63, no. 3 (Summer 2010).

⁹Russell J. Leng, "The India-Pakistan Conflict: An Enduring Rivalry," chap. Realpolitik and learning in the India-Pakistan rivalry, in, ed. T. V. Paul (Cambridge University Press, 2005), 118.

were some efforts at cooperation in the early 1990s that did not come to fruition, but high level discussions were happening. For example, negotiations on Siachen Glacier resumed in November 1992. In Kashmir, tensions remained high and occasionally escalated throughout this period. Relations between India and Pakistan were very tense between 1994 and 1997, but in 1997 talks at the foreign secretary level were restarted, and relations began to improve. In the summer of 1997, both governments made goodwill steps including agreeing to establish working groups to discuss issues of disagreement. Bilateral talks which had been suspended since 1994 resumed in 1997 after Pakistan showed some flexibility on its position of decreasing troops at the Line of Control in Kashmir as a precondition for negotiations.¹⁰ Positions on Kashmir did not change during these negotiations, but the fact that they were ongoing indicates an improvement in relations.

There are several political indications that positions began to become more moderate in the mid-1990s. In January 1996, Pakistan's military leadership was going through changes, and General Jehangir Karamat, a moderate, assumed leadership. However, the moderate positions did not extend to higher level strategic issues. Predicting that India would test a nuclear weapon, Pakistan likewise began preparations for a test site, with one tunnel ready by June 1996.¹¹ From the Indian side, relations towards Pakistan were also improving in the mid-1990s. In 1996, Indian Foreign Minister Inder Gujral indicated that he sought improved relations with Pakistan, and stated that India would not respond to Pakistani provocations or hostile rhetoric on Kashmir, and that India was ready to pursue high level talks.¹²

Apart from the nuclear weapons developments on both sides, the conventional arms race was at a moderate level during this period - ongoing but at a decreased pace. Through-

¹⁰Kamal and Gupta, see n. 4, 13.

¹¹Feroz Hassan Khan, *Eating Grass: The Making of the Pakistani Bomb* (Stanford, California: Stanford University Press, 2012), 262.

¹²George Perkovich, *India's Nuclear Bomb: The Impact on Global Proliferation* (Berkeley, CA: University of California Press, 1999), 391.

out the 1990s, both India and Pakistan faced budgetary pressures, and both states limited the growth of their defense spending (though India went for an increase again in 1998).¹³ Both states were also facing strong pressure from the international community to restrain their competition.

Compared to other periods in India-Pakistan relations, the 1990s represent a period of relatively stable beliefs that the adversary was looking to cooperate at least in some mutually acceptable areas. While this might be seen as a very modest positive turn in other contexts, for India and Pakistan it represents a sizable detente. Importantly, the beliefs about cooperative behavior by the adversary are focused in areas of mutual benefits, not across the board. The multifaceted nature of the India-Pakistan rivalry creates situations where beliefs about cooperation can emerge in some security, such as long term escalation prevention, while other security spheres, such as territorial disputes, remain highly contentious and both sides expect the other to constantly pursue short term advantages.

5.3.3 Leadership shifts and the opportunity to institutionalize co-operation

Both India and Pakistan underwent significant leadership changes in the late 1990s, and in both cases, the leadership shifts affected their country's own security policy and the way each state was viewed by its adversary. As predicted by the theory, the evidence shows that the uncertainty created by these leadership changes was a factor in motivating India and Pakistan to take a step beyond informal cooperation and turn to a formal agreement in the few areas where they did see mutual cooperative interests.

In February 1997, Nawaz Sharif was elected as Pakistan's Prime Minister, coming

¹³Kamal and Gupta, see n. 4, 22.

in with a particularly strong base of public support.¹⁴ Sharif's rise to power was a case of a right of center party getting Pakistan's Islamist vote, and succeeding in pushing out Islamist parties, which then limited the influence of Islamism.¹⁵ The economic pressure facing Pakistan's military was a factor for Sharif's foreign policy; he was "responsive primarily to the demands of the business community, and also to understand that Pakistan's geostrategic interests lay in economic development and not regional adventurism or the quest for military parity with India."¹⁶

While campaigning for election, Sharif took a more moderate approach on India, and promised he would seek talks with India. These shifts were perceived by Indian officials.¹⁷ Sharif's victory "raised hopes that the two countries actually could engage in productive talks leading to normalization of relation." From the Indian perspective, Sharif seemed willing to take some political risks domestically in order to engage in discussions. But, there was still disagreement on the role of Kashmir in any bilateral discussions, and both sides made their overtures for discussions through secret channels.¹⁸ They were exploring cooperation options secretly is a key indicator of the heightened uncertainty. Previously it was clear that neither side was willing to cooperate, but with leadership shifts emerging, cooperation was more likely but far from assured and both sides were not sure that these positive signs were in fact positive. By keeping the discussions secret, both sides sought to shield themselves from domestic backlash if in fact these efforts proved ineffective or even duplicitous.

Sharif began to make cooperation overtures to India shortly after coming to power. This interest on the Pakistani side combined with Indian Foreign Minister Inder Gujral's ac-

¹⁴Vali Nasr, "National identities and the India-Pakistan conflict," in *The India-Pakistan Conflict: An Enduring Rivalry*, ed. T.V. Paul (Cambridge, UK: Cambridge University Press, 2005), 197.

¹⁵Ibid., 196.

¹⁶Ibid., 198.

¹⁷Perkovich, see n. 12, 392.

¹⁸Ibid., 392.

tive efforts to establish positive relations created the first detente in India-Pakistan relations since talks were broken off in 1994. Bilateral talks resumed in March 1997 in New Delhi, and the Indian and Pakistani Prime Ministers also met in April and May 1997 to discuss a peace process. Gujral became Prime Minister in April 1997, and he met directly with Sharif – the first substantive meeting between prime ministers since 1989.¹⁹ Gujral had adopted an important shift in Indian foreign policy, whereby India would not demand reciprocation of concessions from its neighbors in response to cooperative moves by India.²⁰ This approach facilitated the start of talks at the secretary level with Pakistan. The attempts were quickly threatened by Indian missile deployments near the border, but diplomats continued to try to establish a bilateral dialogue.²¹ The peace talks still seemed promising, and bilateral meetings were held again in June 1997, which for the first time since 1972 included direct dialogue on Kashmir.²²

In March 1998, an even more significant shift occurred in Indian politics. The electoral victory of the Bharatiya Janata Party (BJP) party was a significant change in Indian politics, signifying the decline of the Congress party which had held political power since India's independence. With the BJP, both Pakistani and US officials saw the change as likely to lead to a more hawkish position by India.²³ The BJP had a tougher line on Pakistan, but at the same time, its new leader Atal Bihari Vajapee was more moderate, and the party had gained support in part due to his moderate positions.²⁴ While the election did not focus on foreign policy issues, all the parties generally supported the peaceful engagement policies of

¹⁹Perkovich, see n. 12, 394.

²⁰Sumit Ganguly and Devin T. Hagerty, *Fearful Symmetry: India-Pakistan Crises in the Shadow of Nuclear Weapons* (Oxford University Press, 2005), 149.

²¹Khan, *Eating Grass*, see n. 11, 266.

²²Perkovich, see n. 12, 397.

²³Khan, *Eating Grass*, see n. 11, 267.

²⁴Surya Prakash, "The 1998 election marks a watershed," *The Pioneer* (Apr. 1998).

the prior prime minister,²⁵ so it was unclear whether as prime minister, Vajapee would live up to some of his and the BJP's more ardent anti-Pakistani positions, or continue to adopt the existing cooperative approach.

In Pakistan, officials saw the BJP as a “different political animal” but were mixed on what this would mean for security policy. Some in the Pakistani government expected that the new Indian leadership would rush towards a nuclear fait accompli with little to deter it, leaving Pakistan facing intense international pressure not to respond. On the other hand, others saw the new leader Vajpayee as relatively cautious and unlikely to change the restrained course of the prior leadership.²⁶ While he did take a more moderate tone as he assumed office, during the campaign Vajpayee had pledged to take back Pakistani parts of Kashmir. Pakistan feared that the BJP would “fundamentally change the subcontinent’s security narrative.”²⁷

From Pakistan’s perspective, the Indian leadership shift created new uncertainty about Indian intentions to continue complying with the informal cooperation efforts they had begun in the year prior. However, it was not the case that they immediately came to believe that Vajpayee would drop all cooperation efforts, as there were also indications of continuity in Indian foreign policy. Additionally, the sphere of cooperation was pretty limited to non-strategic issues, so in these “easy” areas, there was still a general expectation of ongoing cooperation but now with a heightened risk that India may start to pull away. A low monitoring but formal agreement would allow Pakistan to clarify the areas of mutual cooperation, and the low monitoring features would help in giving earlier and clearer indication if India did indeed start to change course. For example, an Indian failure to follow through with a joint meeting or a notification submission would serve as an indicator that

²⁵Perkovich, see n. 12, 405.

²⁶Khan, *Eating Grass*, see n. 11, 268.

²⁷Perkovich, see n. 12, 410.

the Vajpayee government was not serious about cooperation even on previously accepted cooperation issues.

Unfortunately, explicit evidence of this kind of thinking on the Pakistani side is not available in the current historical data, and further primary source research would be required to better understand how officials connected their uncertainty about the Indian government with arms control agreement options. Evidence that would support this view includes: internal statements by Pakistani officials suggesting that a formal agreement step was now needed after the Vajpayee election or statements that uncertainty about Indian intentions makes it important to try and formalize cooperation steps. Short of such explicit support for the theory, timing could also be a good indicator of a connection. If Pakistani officials only started to discuss formal agreement proposal among themselves after the Indian government change but not in response to several other security issues during this time (including the nuclear tests discussed below), then this timeline of changes in positions would be strong support for my domestic volatility and uncertainty theory.

At the same time, from the Indian position, if the Vajpayee government did still intend to pursue cooperation, accepting a low monitoring agreement would provide a good way of continuing to get the cooperation benefits without paying the high costs that would be associated with high monitoring. There is also a possibility that the Indian government had increased uncertainty about Pakistan's incentives in late 1998. In October 1998, Sharif appointed Pervez Musharraf as the chairman of the joint chiefs. Musharraf opposed cooperation with India more broadly, and was against the Lahore summit. It is possible that Indian officials had concerns about Musharraf's positions earlier on, and saw his appointment as raising uncertainty about the future of Sharif's informal cooperation. Signing a formal agreement with Pakistan at this point would allow India to at least partially bolster cooperation efforts and also bolster those actors in the Pakistani government who supported such actions against the risk of opposition to cooperation by the military. Again, evidence on the

causal connection is currently only speculative at this stage, but would be further bolstered with additional findings on impressions of Musharraf by Indian observers, and the timing of Indian decisions to start pursuing a formal cooperation approach with Pakistan.²⁸

Partially in response to Pakistani missile tests, India tested nuclear weapons on May 11th and 13th, 1998. By the end of May, Pakistan had tested as well, a move which established the rivals as nuclear weapons powers. The impact of the tests on the strategic environment in South Asia cannot be understated. India first tested a nuclear device in 1974, and it was known by both Indian and Western observers that Pakistan had been pursuing a nuclear weapons program. The tests made that underlying threat an immediate reality, and escalation pressures acquired a clear nuclear component. If the crisis response theory for arms control agreements is correct, then the heightened risk associated with the nuclear tests was what motivated the agreement half a year later.

However, while the nuclear tests clearly affected strategic interactions between India and Pakistan, and heightened tensions during the period, there are several reasons to think that the nuclear crisis was only one of the contributing factors towards the likelihood of an agreement, and even then a somewhat mixed one. First, while the tests raised tensions between India and Pakistan, they seemed to have raised international pressure on India and Pakistan even more. Interestingly, the best accounts of the nuclear programs both focus on US and Western responses to the tests, not the responses of the regional adversary.²⁹ Responding to international isolation was India's top priority following the tests, and Vajpayee did not initiate cooperation efforts with Pakistan until months later.³⁰ It also appears

²⁸One of the best sources on India's security policies, George Perkovich's book *India's Nuclear Bomb*, ends for the most part in May 1998, so the in depth study does not shed light on the Indian views in the fall of 1998.

²⁹This focus on international rather than bilateral responses to the nuclear "crisis" can be observed in a number of well known accounts, including: Ganguly and Hagerty, see n. 20; Khan, *Eating Grass*, see n. 11; Perkovich, see n. 12.

³⁰Perkovich, see n. 12, 435.

that the nuclear tests did not directly affect the detente conditions that had developed over Kashmir, so this issue area created an opportunity for cooperation for Sharif and Vajpayee who were both facing external pressure.³¹ The effect of the tests might therefore have been indirect in motivating India and Pakistan to demonstrate some step towards “responsible” cooperation for Western audiences.³²

The tests could also have been an indicator that cooperative policies were coming to an end, so in themselves a factor that raised uncertainty about intentions to cooperate. This view would suggest that uncertainty may still be operative in motivating cooperation, but in this case domestic political shifts are not its key source. However, some of the evidence suggests that both sides were aware of the other’s capabilities, and expected the tests. Pakistan claimed that it was not surprised by the tests, and accounts from the Pakistani side show that they had been anticipating a likely Indian test since 1995.³³ At the same time, India was not particularly worried about a Pakistani response – well-informed Indian officials expected Pakistan to test in response if it had nuclear weapons capabilities and be exposed as lacking them if tests did not occur.³⁴ While some politicians expressed surprise at Pakistan’s test, well informed security experts expected that Pakistan would test.³⁵

While further evidence is needed to differentiate the effects of the nuclear tests and the leadership changes that preceded them, in all likelihood both were contributing factors. It is also difficult to speculate whether without the tests, a similar agreement would have still occurred, though perhaps somewhat later. The timing here is confounded by other

³¹Ganguly and Hagerty, see n. 20, 151.

³²Feroz Hassan Khan, “Pakistan’s Nuclear Future: Reining in the Risk,” chap. Reducing the Risk of Nuclear War in South Asia, in, ed. Henry Sokolski (The Strategic Studies Institute Publications Office, United States Army War College, 2010).

³³Khan, *Eating Grass*, see n. 11, 261, 268.

³⁴Perkovich, see n. 12, 419.

³⁵*Ibid.*, 434.

factors – a major military crisis broke out between India and Pakistan just months after the Lahore Declaration, though for reasons that were more directly related to contested territory and less so as an abrogation of the agreement or as a response to nuclear tensions. While the crisis created by the nuclear tests likely provided additional urgency to pursue a formal agreement, it is also interesting to note that the possession of nuclear weapons has not motivated India and Pakistan to pursue more arms control agreements over the last decade and a half that the capability has been well established. Unlike the US and USSR and later Russia, India and Pakistan have not tried to limit their nuclear capabilities or even nuclear weapons delivery systems.

5.3.4 Outcome: The Lahore Declaration

In February 1999, Indian Prime Minister Vajpayee traveled to Lahore, Pakistan for two days of negotiations and ceremonial contacts. The agreement that emerged from this summit was based on ideas previously prepared by both sides, but spurred on directly by the leaders. Having personally participated in the preparation of the Lahore Declaration, former Pakistani official Feroz Hassan Khan notes in his book how quickly the staff was asked to prepare an agreement on the eve of the Lahore summit.³⁶

The commitments made with the Lahore Declaration were very ambitious, but imprecise about specific steps, and lacking intrusive information tools to observe compliance. For example, the states committed to finding a peaceful resolution to the Kashmir conflict, but the agreement does not call for any restraint on troops or militarization of territory, and does not set up a clear framework for future negotiation rounds. The more specific commitments that are outlined in the agreement, and where we do see some low level information

³⁶Khan, *Eating Grass*, see n. 11, 304–305. In a conversation with the author about the Lahore Declaration, Khan also highlighted the high level political pressure on bureaucrats in the lead up to the agreement, and the subsequent speed of the preparations (meeting on December 4, 2014, Monterey, California).

exchange provisions used, are in areas where cooperation was seen as mutually beneficial, ones which were modest in nature, and where there are few if any advantages to cheating. A few of the measures focus on avoiding inadvertent escalation, including notification of missile tests and a commitment to develop measures to prevent unauthorized or accidental use of nuclear measures. Notably, this last commitment is not accompanied by even a low level information provision, such as reporting on the domestic measures or laws that have been adopted to improve safety. In what is another indicator of the Lahore Declaration as a formalization of implicit cooperation, the sides agreed to review existing CBM efforts and upgrade previously established communication links between militaries.

Although the Lahore Declaration did add several new commitments and information exchange tools (such as the missile notifications and a key recognition of nuclear dangers) it also largely institutionalized cooperation in the areas where informal coordination was already ongoing and where strong cooperation incentives were accepted on both sides. The Declaration provides a stronger and more formal articulation of issues which were discussed by foreign ministers back in June 1997 as well, including a desire to address territorial disputes and set up additional working groups and consultative commissions to work on security issues.³⁷

5.3.5 India-Pakistan case assessment

Looking at the patterns of cooperation in the case of the Lahore Declaration, we see that the CBM agreements emerge during periods of detente between India and Pakistan, and both states also have new leaders. In contrast, the lulls in efforts to even engage in negotiations, or when proposals by both sides are rejected by the other, have been characterized by heightened military tension and stability in senior leadership. During highly antagonist periods, such as

³⁷Nuclear Threat Initiative, “Lahore Declaration,” online factsheet and timeline of developments, n.d.

during repeated low level crises or high military readiness, the Indians and Pakistanis have seen low level CBM type of agreements as not possible, even though they were well aware of how these tools were working in the European context.

The outcome of the Lahore Declaration thus raises some serious questions about the applicability of learning explanations. There have numerous policy recommendations written by both US and South Asian experts suggesting that India and Pakistan could learn from the US-Soviet, European, or even Middle East experiences in designing arms control agreements.³⁸ In 1984 and also throughout in the Reagan administration, high level US officials discussed ideas for CBMs with the Pakistanis, and presented a whole menu of options that were being used in Europe, but Pakistan was in large part not amenable to such approaches.³⁹ Even given ample opportunities to learn about CBMs and arms control treaties, including even direct efforts at tutorials by US policy experts, India and Pakistan have not incorporated European-inspired information exchange provisions into their agreements. The goals of the Lahore Declaration are similar to European CBMs, but the Declaration does not call for most of the intrusive information tools, such as observational visits by the other side, overflights for observations, or even regular exchanges of reporting information.

Out of the various CBM measures over the years, the Lahore Declaration was the most likely to reflect such external learning, as key individuals involved in the process, such as Feroz Hassan Khan, had been directly involved in sessions with Western experts and had studied the European models. Knowing “how” to do arms control does not seem to be enough to motivate some states to actually do it. It is clear that learning from other states’ experience has mixed responses in the South Asia context, where even tools that

³⁸For examples of papers that make recommendations on possible models for India and Pakistan to use in agreements, see: Kamal and Gupta, see n. 4; Colonel Rafi uz Zaman Khan, *Pakistan and India: Can NRRCs Help Strengthen Peace?* (Simpson Center Occasional Paper No. 49, 2002)

³⁹Michael Krepon and Mishi Faruquee, eds., *Conflict Prevention and Confidence-Building Measures in South Asia: The 1990 Crisis* (The Henry L. Stimson Center, 1994), 11.

seem to work well elsewhere are not always well received precisely for the reason that they are external. India and Pakistan both opposed the idea that Western approaches would have application in South Asia.⁴⁰ They viewed European-centric approaches with great suspicion that they would actually end up putting the South Asian countries at a disadvantage if broadly applied. Finally, the bureaucratic culture of maintaining CBMs that developed in the US-Russia context –such as maintaining regularity of set meetings even during crisis – has largely not occurred in South Asia.⁴¹ The Lahore Declaration itself called for upgrading and reviewing the communication link CBMs, (such as between the Directors General Military Operations) which were not routinely implemented.⁴² This suggests that India and Pakistan have not only hesitated to re-apply external experience, but also have not been socialized into regularly accepted behavior from CBM related interactions with one another.

The argument that India and Pakistan have lacked the technical knowledge to pursue intrusive verification is likewise flawed. For example, it is possible that monitoring and verification would be very costly for India and Pakistan because without the advantage of satellite technology, they would have to rely on intrusiveness into one another's sovereign territory. However, even analysts who note the limitation in technology suggested that an interested third party, such as the US, could assist with disseminating information to both states collected with its own National Technical Means.⁴³ Also, a number of agreements on troop levels, borders, exercises, or deployments could all be monitored with reconnaissance

⁴⁰Dixit, see n. 5, 195.

⁴¹Michael Krepon, "A Time of Trouble, A Time of Need," in *Crisis Prevention, Confidence Building, and Reconciliation in South Asia*, ed. Michael Krepon and Amit Sevak (New York, NY: St. Martin's Press, 1995), 8.

⁴²The DGMO hotline has been used in peacetime but not during conflicts, when it would be most relevant for diffusing tensions or diminishing misperception. The communication mechanism was reportedly not used during the 1987 Brasstacks crisis, the 1990 Kashmir crisis, or the 1999 Kargil war. Amitabh Mattoo, "Military and Nuclear CBMs in South Asia: Problems and Prospects," in *The Challenge of Confidence-Building in South Asia*, ed. Moonis Ahmar (New Delhi, India: Har-Anand Publications, 2001), 205.

⁴³Kamal and Gupta, see n. 4, 28.

flights rather than satellites if India and Pakistan negotiated an Open Skies type of treaty which allows for a certain number of overflights, with agreed upon information collection equipment.

Finally, it is also not the case that India and Pakistan have simply not know how to pursue information exchange and verification, since they do have more intrusive regimes in other non-security contexts. In another competitive situation, where both states agreed on the management and division of a limited resource, they use a developed verification regime. The 1960 Indus Waters Treaty includes regular data exchanges, and parties may request data readings on a daily basis.⁴⁴

Despite ongoing disputes between the two rivals and the nuclearization of the subcontinent, the Lahore Declaration is a type of agreement that was “rooted in mutual interests”⁴⁵ that had developed in the period prior to the agreement. Sharif was trying to maintain parity with India not through military competition but through economic growth.⁴⁶ The beliefs of mutual cooperation interests did not last long past the Lahore Declaration, and the Kargil military conflict broke out in May 1999.⁴⁷ After Kargil, Indian beliefs about Pakistan’s incentives shifted, and they came to see Pakistan as having no intention for a peaceful relationship with India. India and Pakistan went back to a state of intense rivalry that had

⁴⁴Sandeep Gopalan, “India-Pakistan Relations: Legalization and Agreement Design,” *Vanderbilt Journal of Transnational Law* 40 (Aug. 2012): 687.

⁴⁵Nasr, see n. 14, 195.

⁴⁶*Ibid.*, 195.

⁴⁷The Pakistani initiation of the Kargil crisis was not directly a defection on the specific terms of the Lahore Declaration, but could be broadly interpreted as a defection from the cooperation. There is also some evidence that as a defection on the agreement, the move was advantageous to Pakistan and costly for India, which was essentially “suckered” by being overly complacent about Pakistani intentions. Ganguly and Hagerty (2005) note that, “In the aftermath of the Lahore peace process, the Indian political leadership had come to believe that there was little likelihood of renewed Pakistani military malfeasance across the LoC [Line of Control] in Kashmir. As a result, they had reduced routine surveillance flights near the LoC, and had not entertained the prospect of a Pakistani pincer movement near national Highway 1 A.” Ganguly and Hagerty, see n. 20, 152.

looked like it was abating when the Lahore process was happening.⁴⁸ The evidence of a shift back to highly intense rivalry across all issue areas is suggestive of a contrast to the pre-Lahore and pre-Kargil time period.

The India-Pakistan relationship is highly adversarial all the time. Occasionally though, small pockets of detente and cooperative expectations emerge on some limited issues. India and Pakistan have been most likely to sign agreements during periods when they see one another as relatively cooperative, and when domestic political uncertainty motivates them to try and secure that cooperative condition longer term. While they would still not expect each other to comply in other areas, such as territorial or conventional force limits, during detente moments there are strong incentives for cooperation on broad strategic stability issues, as well as safety and escalation avoidance. When these cooperative expectations are then threatened by domestic political shifts, we see an effort to secure the progress that has been made and so a push to institutionalize pieces which can be achieved. At the same time, India and Pakistan do not pursue more intrusive measures because these would too costly and unnecessary for the types of issues where cooperation is generally expected and interests are seen as mutual.⁴⁹ These observations based on the Lahore Declaration case challenges some existing arguments that greater domestic stability is a key precondition for the formation of CBMs in South Asia.⁵⁰

⁴⁸Nasr, see n. 14, 173.

⁴⁹The dynamic is actually similar between India and China as well, where cooperation does not happen on issues where beliefs about high incentives to cheat remain strong. Low monitoring confidence building measures between India and China have only emerged in areas where they have pretty clear beliefs that the other side does not intend to violate, and where there was informal cooperation before these agreements. The Indo-Chinese border for example has been stable since 1962, and was so before any formal cooperation, as both India and China had already reduced troop numbers along the border. This is the only area where CBMs between the two states have emerged. Waheguru Pal Singh Sidhu and Jing-dong Yuan, "Resolving the Sino-Indian Border Dispute: Building Confidence through Cooperative Monitoring," *Asian Survey* 41, no. 2 (2001): 362.

⁵⁰Ganguly (1995) argues that domestic volatility is a problem because makes it difficult for leaders to focus on international issues over domestic concerns, and also because new bureaucracies have to become convinced that CBMs are useful as security policy tools. Sumit Ganguly, "Mending Fences," in *Crisis Prevention, Confidence Building, and Reconciliation in South Asia*, ed. Michael Krepon and Amit Sevak (New York,

5.4 Egypt, Israel, and the 1979 Peace Treaty

In 1979 Egypt and Israel signed a peace treaty that ended a state of hostilities that had been ongoing with a ceasefire since the 1973 Yom Kippur War. In addition to establishing peaceful relations between the two adversaries, the treaty was the type of war termination agreement that also includes extensive arms control provisions for border territories. Under the conditions of the treaty, Israel withdrew from the Sinai Peninsula territory it had seized during the 1967 war and returned it to sovereign Egyptian control. The parties agreed to a region at the border where military forces would be limited to low levels, and movement of those forces would be restricted. The goal of the limitation was to restrain both states' ability to launch a surprise attack over the border or to further amass troops at the border in threat of a fast escalation to war. The treaty calls for highly intrusive measures for monitoring compliance with limitation on armaments and troops, including direct inspections by UN observers and personnel from both states on both sides of the boundary of the limited force zone, and ongoing observation through reconnaissance patrols.⁵¹

The treaty followed a period of no negotiations between Egypt and Israel, despite the fact that the states had ongoing security issues, contested territory, and a threat of future conflict. The tense security situation did not change during the mid-to late 1970s, so it is puzzling why the peace treaty did not emerge earlier. The existing explanations for the treaty give some insight into the role of leaders and the influence of the US in pushing for a peace deal, but they are not sufficient to explain both the timing of the treaty and both sides' acceptance of very stringent and costly measures to verify their military restraint.

NY: St. Martin's Press, 1995).

⁵¹UN forces are in an observer role only, and are not intended to themselves respond to any aggression. The goal is that they will be able to verify compliance with the provisions of the treaty, and also decrease the risk of a surprise attack across the border Michael Akehurst, "The Peace Treaty Between Egypt and Israel," *International Relations* 7 (1981): 1044. For full treaty and annex text, see: "Peace Treaty Between Israel and Egypt," 1979-03-26.

However, looking at the domestic shifts in both states and their views of one another gives strong indication that my theory fills this gap in understanding why this type of treaty comes about when it does. Though additional material would be needed to fully trace the causes and effects, the conditions of beliefs prior to the treaty and timing of new domestic volatility events and treaty outcomes support the theory predictions. As a case study, the 1979 treaty also illustrates how the presence of both kinds of domestic political volatility – top down leadership change and bottom up social unrest – can lead to a higher likelihood of intrusive information treaties.

5.4.1 Possible explanations

As with the India-Pakistan case, the possible explanations for the Egypt-Israel Peace Treaty suggest a number of divergent observable implications, which are useful to outline prior to presenting the historical evidence.

Starting with the domestic political volatility theory developed in this project, in this case we would expect to see a high degree of tension and distrust between Egypt and Israel prior to the treaty. If Egypt and Israel were indeed certain of one another as “competitive” types prior to the treaty, we should see evidence on both sides exhibiting fears that the opponent will seek short term security advantages through behaviors on the ground, through negotiations themselves, or in competition for support from the US. We should observe few if any areas, even on peripheral security issues, where both sides identify mutual interests in cooperation. This is a key difference from the India-Pakistan case – unlike the South Asian adversaries, if the Egypt and Israeli baseline beliefs are firmly situated in expectations of cheating by the other side, then we would not expect to see any evidence of a detente across the board of security issues.

Similar expectations then follow regarding the occurrence of volatility events. First, it should be the case that either one or both of the states experienced either top down or

bottom up volatility, and that this volatility plausibly created pressure on the foreign policy. We would expect then to observe new efforts at cooperation, and new flexibility in positions emerging after these volatility moments. The high monitoring treaty that emerges from negotiations is a compromise from maximalist positions on both sides, so we would expect both sides to see the treaty as a providing good ways to detect cheating, but still as exposing them to the risk of being taken advantage of by a motivated adversary.

There are several likely alternative explanations for the Egypt-Israel treaty, all of which focus on factors which undoubtedly had a positive effect in pushing the states towards an agreement, but as the evidence below suggests, likely offer only an incomplete story. First, the US played a strong role in the negotiations, acting as a constant intermediary between Egypt and Israel and pressuring both sides to make the necessary concessions.⁵² The influence of the third party could explain the treaty outcome because the US was critical to breaking the deadlock that likely would have continued if the two states were only negotiating bilaterally.⁵³ The high monitoring treaty outcome occurred because the US was there to create extra costs for both sides for just staying with the non-cooperation status quo, and also to help defray the costs of a high monitoring treaty by providing its own security guarantees.

A second line of argument suggests that the two states came to the agreement through an incremental process by which both sides demonstrated their commitment to peaceful intentions. Egypt and Israel were able to sign the 1979 agreement because of the confidence that had been built through the successful implementation of the earlier Sinai treaties that had followed the war. These agreements used monitoring along the border, on-site inspec-

⁵²For example, without a peace treaty, there was a threat that the US might not continue its high level of economic and military aid to Israel. David Aviel, "Economic Implications of the Peace Treaty Between Egypt and Israel," *Case Western Reserve Journal of International Law* 12, no. 1 (1980): 59.

⁵³Akehurst, see n. 51.

tions, and other surveillance measures.⁵⁴ If prior treaty experience is a key driver of the 1979 treaty, then we would expect to observe discussions of the treaty compliance record in the negotiations, or references to the treaty provisions as a model for the next agreement. Alternatively, another indicator of the influence of prior treaties would be observed if new negotiations or compromise steps in ongoing negotiations are taken in response to actions related to the prior agreement.

Finally, Telhami makes a compelling argument that shifts in the regional and international balance of power made an agreement more likely, while in the degree of centralization in the Egyptian and Israeli governments and the personalities of the key leaders explain which side attained more of its bargaining positions in the Camp David Accords.⁵⁵ According to Telhami, the shifts in the Egyptian position were a result of changes in the distribution of power rather than domestic economic pressures. Egypt began to see alignment with the US as more advantageous than with other states in the Arab world, and preferred a treaty that met US interests rather than those in the region. Telhami's argument relies on observations of the power shifts, preference changes in the Egyptian position, and effectiveness of negotiators, but his theory focuses on which side came away with a better bargain rather than how the actors chose to monitor compliance with the bargain that is reached.

The next section presents the historical evidence on key shifts that contributed to the 1979 Peace Treaty. My goal with this limited case study is not to disprove alternative explanations, but rather demonstrate that a different look at the evidence suggests they might be incomplete, and the domestic volatility explanation can plausibly provide new explanatory power for previously overlooked elements of the treaty.

⁵⁴Kamal and Gupta, see n. 4, 35.

⁵⁵Shibley Telhami, *Power and Leadership in International Bargaining: The Path to the Camp David Accords* (New York, NY: Columbia University Press, 1990).

5.4.2 Drivers of change in the Egyptian Position

The 1973 Arab-Israeli war ended on October 25th 1973, and it was followed in the next two years by two temporary agreements which limited troops and movement in the Sinai territories. The Sinai I (January 18, 1974) and Sinai II (September 4, 1975) force disengagement agreements created a buffer zone between Egypt and Israel which was monitored by the US and UN, as well as by the national capabilities of the two sides. For the next two years there was a break in cooperative activity, and neither side made steps towards concluding a permanent peace treaty.

Following the war, Egypt's military capabilities were limited and Israel remained at a considerable advantage. Although it would be unlikely to prevail in a direct military conflict, Egypt and the other Arab states could have continue to compete with Israel by trying to degrade its military advantage and economic resources through ongoing arms racing and threats of military strikes. However, this strategy meant strain on the economy.⁵⁶ The defense budget in 1977 was 24 percent of GDP, so a peace treaty with Israel had the potential to free up considerable resources for the civilian sector.⁵⁷ The economic problems led to unrest among students and workers, which created pressure on the regime and threatened to undermine its base of popular support.⁵⁸

Major food riots erupted in January 1977 in response to an increase in the price of

⁵⁶M. Cherif Bassiouni, "An Analysis of Egyptian Peace Policy Toward Israel: From Resolution 242 (1967) to the 1979 Peace Treaty," *Case Western Reserve Journal of International Law* 12, no. 1 (1980) Aviel, see n. 52, 58.

⁵⁷*Ibid.*, 59.

⁵⁸Joe Stork, "Sadat's Desperate Mission," *MERIP Reports*, no. 64 (Feb. 1978): 3. The unrest had started even earlier; for example there were riots in universities and factories throughout 1972. While the analysis here focuses on the 1979 treaty, there is some evidence that the 1975 Disengagement agreement may also have been motivated by social unrest in Egypt. Large demonstrations protesting low living standards broke out in January 1975, and again three months later. (Ibrahim Karawan, "Foreign Policy Restructuring: Egypt's Disengagement from the Arab-Israeli Conflict Revisited," *Cambridge Review of International Affairs* 18, no. 3 [Oct. 2005]: 331).

basic commodities.⁵⁹ Outside observers saw this unrest as serious enough to be a threat to the regime, and both the US and Saudi Arabia increased their financial assistance to Egypt in an effort support Sadat in the face of domestic volatility. Sadat began to increasingly believe that the domestic economic problems and the political unrest it was causing could not be resolved without new restraint in the military competition with Israel.⁶⁰ Even publicly, Sadat sought to convince the Egyptian public that economic concerns could be alleviated with a peace settlement.⁶¹

In November 1977, Sadat came to Jerusalem on a historic visit, where he met Menachem Begin and addressed a special session of the Knesset. In his speech, Sadat did not break much new ground as far as Egyptian positions, but his presence in Israel was a strong signal of possible Egyptian flexibility on at least holding direct negotiations. Several historical accounts agree that the process towards a treaty started with Sadat's trip to Israel in 1977.⁶² When Egypt renewed diplomatic efforts in 1977, it was in pursuit of goals that had been relatively constant since 1967 – the return of all occupied territories and the right of the Palestinians for self-determination.⁶³ However, while Egypt's policy on its goals for an agreement may have been consistent, the restarting of negotiations was a sign of change in its position on direct engagement with Israel as a way to attain those security goals.

From the Israeli perspective, it would not have been clear at the time that Sadat

⁵⁹Ibrahim A. Karawan, "Sadat and the Egyptian-Israeli Peace Revisited," *International Journal of Middle East Studies* 26, no. 2 (May 1994): 225.

⁶⁰Stork, see n. 58, 6. A handful of scholars have likewise argued that the domestic unrest in Egypt contributed to an agreement with Israel because it prompted changes in the Egyptian position on the need to restart negotiations. See: Faten Ghosn, "Getting to the Table and Getting to Yes: An Analysis of International Negotiations," *International Studies Quarterly* 54 (2010): 1055–1072; Faten Ghosn, "Domestic Unrest and the Initiation of Negotiations," *International Negotiation* 16, no. 1 (2011): 69–85; Karawan, "Foreign Policy Restructuring: Egypt's Disengagement from the Arab-Israeli Conflict Revisited," see n. 58.

⁶¹Stork, see n. 58, 12.

⁶²Bassiouni, "An Analysis of Egyptian Peace Policy Toward Israel: From Resolution 242 (1967) to the 1979 Peace Treaty," see n. 56.

⁶³*Ibid.*

was going to respond to the domestic pressures by seeking to allot more resources to public goods and the civilian sector. Squeezing the population in favor of continuing military build up was a possibility, and the regime did respond to the demonstrations. Further in depth research is needed to assess whether Israeli leaders saw the riots in Egypt as a source of uncertainty about Egypt's foreign policy intentions, as the domestic volatility theory would predict. There are some preliminary indications. For example, Moshe Dayan writes that he learned from American interlocutors that in going to Jerusalem to restart negotiations, Sadat was responding to the frustration and the "general mood" of his people, who seemed tired of ongoing conflicts with Israel.⁶⁴

There is clearer evidence that Israeli uncertainty about Egypt increased in response to Sadat's visit to Jerusalem. Israeli officials and the public in general were very suspicious of any offer by the Egyptians for cooperation. On the eve of Sadat's visit, both Begin and his senior leaders seemed unsure about how to interpret Sadat's intentions. Begin began to increasingly see the visit as a step towards a peace agreement, while Dayan was more skeptical and expected that in exchange for peace Sadat might expect unreasonable concessions from the Israeli side.⁶⁵ Some senior officials believed that Sadat's offers of peace were a form of deception, and the Israeli Chief of Staff even said in an interview that Sadat's visit itself could be a cover for a surprise attack by Egypt.⁶⁶ That even the overture at cooperation would raise such intense suspicion is indicative of the types of beliefs held about Egypt at the time. Far from seeing any detente, the Israeli military leaders clearly expected Sadat's intentions as focused on building up the Egyptian army against Israel.

⁶⁴Moshe Dayan, *Breakthrough: A Personal Account of the Egypt-Israel Peace Negotiations* (New York, NY: Alfred A. Knopf, 1981), 90.

⁶⁵*Ibid.*, 76.

⁶⁶"No More War:" *The Peace Plan of the Israeli Government and President Sadat's Journey to Jerusalem, November 1977 Documents on the Background to Sadat's Visit and the Israeli Government's Reaction* (Prime Minister's Office, Israel State Archives, n.d.).

A minority of leaders, including Defense Minister Weizman, saw the offers for dialogue as an “opportunity” rather than an attempt to trick Israel. Of course, Israel would have to be very cautious, and these offers were not interpreted as a new trustworthiness on Egypt’s part, even by the more optimistic officials.⁶⁷ Dayan was also impressed with Sadat, and in his memoir notes that after the speech, he “judged that there was a chance of coming to an agreement with him. I felt he honestly wanted to end the successive wars with Israel, and this desire would bring him closer to our positions.”⁶⁸

5.4.3 Leadership Change in Israel

While domestic unrest was motivating Sadat to shift Egyptian policy, and possibly motivating Israeli officials to seriously consider Sadat’s offers of negotiations, the leadership change in Israel also increased uncertainty about the prior intensity of Israeli opposition to cooperation, and created an opportunity for a deal.

The Likud party won the elections in May 1977, and in June Menachem Begin became the prime minister. Begin was not expected to be a proponent of peaceful settlement with Arab states. Begin had previously opposed any withdrawal by Israel from the occupied territories. He opposed UN Resolution 242 which called on Israel to withdrawal to 1967 borders and had also criticized the previous government for the limited border agreements with Egypt and Syria.⁶⁹ It was therefore not the case that the leadership change changed Egyptian beliefs about Israeli intentions because of what they knew about the new leader, and in fact if Egypt has responded only to Begin’s known policy positions, they would have drawn the conclusion that Israel was even more likely to oppose cooperation than their prior

⁶⁷ “Interview with Defence Minister Weizman in Yediot Aharonot,” Apr. 21, 1978, Israel Ministry of Foreign Affairs Volume 4-5: 1977-1979.

⁶⁸ Dayan, see n. 64, 82.

⁶⁹ See n. 66.

stance.⁷⁰

Begin's appointment of Moshe Dayan as foreign minister was however a possible sign of policy shifts. Dayan was highly respected statesmen, an outsider in the political system, and a controversial figure who was blamed by some for Israel's failure to anticipate the 1973 war and also heralded for his military strategy brilliance in 1967 war. That Dayan's appointment raised uncertainty about Israeli foreign policy is suggested in a number of US press reports from the time. Under a headline of "An Israeli Everyone Recognizes but Few Know," *The New York Times* noted the possible limits in Dayan's influence as foreign minister, his calls for Israel to seriously evaluate what was negotiable in a possible peace, and at the same time his "tough posture" with Egyptian interlocutors.⁷¹ Another article noted how Dayan quickly initiated secret trips to several Arab states to explore possibilities for cooperation.⁷²

The evidence shows that Begin's election created uncertainty in Egyptian beliefs of Israeli intentions, and was interpreted by Sadat as an opportunity to pursue new cooperation. During the fall of 1977, Israel and Egypt were not negotiating directly, and their discussion of terms for an agreement was communicated through trusted interlocutors. Moshe Dayan met with the King of Morocco in September 1977, and a representative from Sadat presented the Egyptian position. As Dayan paraphrased in his memoir, the representative noted that "Sadat had had no faith in previous Israeli Governments but he had faith in us."⁷³ Sadat seemed ready to discuss a number of information related provisions for an agreement, including UN

⁷⁰Somewhat later in the negotiations, domestic unrest occurred on the Israeli side as well, though it is unclear whether it was perceived by Egypt as an indicator of possible pressure on Israeli security policy. Thousands of people came out in demonstrations in April 1978 in critique of the government that was not doing enough to secure peace. Evidence that Egyptian observers became less certain about Israeli intentions following these demonstrations would provide further support for the theory. Aviel, see n. 52, 58

⁷¹William E. Farrell, "An Israeli Everyone Recognizes but Few Know," *The New York Times*, July 20, 1978.

⁷²William E. Farrell, "Dayan has always liked the limelight," *New York Times*, Jan. 15, 1978.

⁷³Dayan, see n. 64, 47.

forces stationed to monitor the border in the Sinai.⁷⁴

At the time of Sadat's visit to Jerusalem, Israeli officials had been surprised by Sadat's sudden willingness to begin negotiations on a peace agreement.⁷⁵ However, the reasons for Sadat's visit, which Dayan later recounted in his memoir, are entirely consistent with the domestic volatility theory. First, it is clear that Sadat had been carefully observing the Israeli domestic leadership change and Begin's electoral victory. In response to Dayan's explicit question about why he decided to come to Jerusalem, Sadat said that at first, "he had been skeptical about Begin's willingness to conduct peace negotiations with Egypt." During Sadat's visit to Romania, President Ceausescu had told Sadat that Begin was a "strong man," suggesting he could manage internal Israeli opposition. Sadat said that he knew about the issues he faced in coordinating with Arab state allies when it came to a peace deal, "but Begin, I did not know at all." Sadat, realizing that Israel also had security problems to address, decided that he would try to deal directly with Israel rather than going through the security council or the US.⁷⁶

5.4.4 A complex path towards the Peace Treaty

Following Sadat's visit to Jerusalem, the path towards an eventual peace treaty was a rocky one, with moments of breakthrough followed by repeated stalemate in negotiations. Both sides seemed to want a peace agreement, but not at any price; this was particularly true on the Israeli side as Israel would have to give up territory it currently controlled.⁷⁷ Talks

⁷⁴Dayan, see n. 64, 48.

⁷⁵Analysis of the Jerusalem visit done at the time was also uncertain about its real motivations, which also suggests that the move was not clearly interpreted as a sign of Sadat's new willingness to cooperate, but rather contributed to greater uncertainty about his intentions and a possibility of a cooperative turn. On speculation about how the visit came about for example, see: Stork, see n. 58.

⁷⁶Dayan, see n. 64, 87–88.

⁷⁷This account draws from: Kenneth W. Stein, *Heroic Diplomacy: Sadat, Kissinger, Carter, Begin and the Quest for Arab-Israeli Peace* (New York, NY: Routledge, 1999).

between Begin and Sadat in December 1977 in Ismailiya, Egypt, ended in failure and were followed by repeated talks between Egyptian and Israeli officials in Cairo, Jerusalem, and Leeds Castle, UK. While progress was made during this time, it had not brought the parties close enough to an agreement, and in August 1978 the US called for a summit at Camp David.

Secondary sources indicate that prior to Camp David there was a narrowing of positions between the two sides on the details of what was to become the 1979 Peace Treaty, and particularly its military terms.⁷⁸ Specific proposals on monitoring provisions were made in at the end of 1977, and Israel provided Egypt with its preferred options, starting with joint Egyptian-Israeli patrols for supervision, and followed by the use of UN forces for monitoring.⁷⁹ The Egyptian side rejected the idea of joint patrols for monitoring,⁸⁰ and the fact that the treaty ultimately did call for the UN monitors suggests a compromise on the Israeli side towards its less preferred option. After the Ismailiya summit, the sides agreed to form a military committee, and the implementation of observation and verification measures in the Sinai was on that agenda.⁸¹ If at least some of the information provisions of the treaty were agreed upon prior to Camp David, this would suggest that the US may have played a key role in gaining agreement on other issues, but the design of the peace treaty itself did not rely as crucially on third party involvement. Dayan's account is not entirely clear on this point, but he suggests that the disagreement over what kinds of troops that would monitor the border was again addressed at the Leeds Castle Conference in July 1978, which involved the US as well but was before the more intense US involvement at Camp David. Because a number of issues were treated as a package deal during this period, further in depth research

⁷⁸See chapter 8 in Stein, see n. 77.

⁷⁹Dayan, see n. 64, 93.

⁸⁰Ibid., 95.

⁸¹Stein, see n. 77, 244.

would be needed to trace exactly when agreement on the verification provisions emerges.

After Camp David, the steps towards a separate Egypt-Israel peace were complicated but fast. Although further research into this period of negotiations would be needed, the secondary source evidence suggests that verification provisions were not one of the contentious issues holding up an agreement at this stage.⁸² The US got involved again and Carter traveled to Israel to try to push for an agreement in March 1979. Pressure on Begin from within his cabinet also escalated during this time, and Begin finally agreed to the treaty.⁸³ The Israeli parliament ratified the agreement on March 21, 1979 and the treaty was signed on March 26.

5.4.5 Egypt-Israel case assessment

The evidence in the Egypt-Israel case shows that timing of the negotiation moves and the treaty outcome are consistent with the domestic volatility explanation. First, prior beliefs on both sides were strong expectations of likely cheating by the adversary, as is evidenced by a period of tension prior to 1977, a lack of negotiations on even general issues, and even no direct diplomatic contact. In this range, neither side was willing to accept a lasting arms control deal.⁸⁴ Sadat started to reach out to the US indicating his interest in a deal with the Israelis after the 1977 food riots, and then followed with a historic trip to Jerusalem to restart negotiations. Further research on Israeli observations of Egypt's domestic unrest, and how this affected Israel's beliefs about Egyptian incentives and willingness to try cooperation with Sadat, would be an important future test of the theory. It is also clear that

⁸²The most contentious issues were rather the timing of Israeli withdrawal from the Sinai with diplomatic recognition, possible revision of the treaty in five years, US commitments (financial and military), strategic airfields in the Sinai, and timetables for Israeli military government in Gaza and the West Bank. Stein, see n. 77, 257.

⁸³*Ibid.*, 258.

⁸⁴The earlier disengagement of forces agreements were interim and even though they were implemented by both sides, they did not improve relations between the two states.

Sadat was influenced by the change in the Israeli government which raised uncertainty about Israeli intentions. While previous leaders had opposed cooperation, the shift in leadership created new possibilities – Begin could very possibly adopt the same kind of competitive security policies but the evidence shows that Sadat also observed a chance that his adversary might now seek more pragmatic security options. The treaty outcome of a high monitoring agreement is consistent with the theory predictions for states starting at “certain competitor” beliefs and experiencing domestic political uncertainty which creates new uncertainty in expectations of compliance.

The evidence also demonstrates that the case is multicausal, and that other determinants of treaty design likely play a role, though in the underlying conditions that made an agreement more likely rather than the shifts in beliefs that precipitated negotiations. The strategic situation and relative power dynamics in the region motivated both sides to find new solutions for their security challenges, these underlying conditions did not change considerably from the period of no negotiations and high post-conflict tensions to 1977 when negotiations restarted. Between the two periods, we see that Egypt’s starting position on what it sought security-wise vis-a-vis Israel had not changed.⁸⁵ and neither had the Israeli starting point. Power transition factors may indeed have broadly contributed to Egypt’s need to seek new security solutions, but these power shifts were happening over a longer time frame and were apparent in the 1970s.⁸⁶ As the power shift conditions are ongoing on in the 1970s, we observe two distinct foreign policy outcomes in the relationship between Egypt and Israel – war in 1973 and a highly monitored treaty in 1979. Following the treaty, both states continued vying for US assistance to tilt the power balance in their favor, but they did not do so through security institutions. Power transitions and power distribution in

⁸⁵Karawan, “Foreign Policy Restructuring: Egypt’s Disengagement from the Arab–Israeli Conflict Revisited,” see n. 58, 332.

⁸⁶Telhami, see n. 55, 91.

the region helps explain states' security goals, but not why they have at certain times been able to create institutions in order to address them.

The role of the US was also very important in the Camp David Accords, but there are also a number of reasons to believe that a bilateral peace treaty with similar arms control provisions could still have happened between Egypt and Israel. US pressure for cooperation was high prior to the cooperation period as well, but previously it was not successful. For example, the US and USSR tried to facilitate a peace conference in 1973, but it ended in a deadlock.⁸⁷ The evidence also shows that Egypt was interested in a bilateral solution, and the early secret contacts between Israel and Egypt to restart negotiations in 1977 were explicitly kept from the US because of fears that the US would jeopardize the bilateral negotiations with a more regionally focused plan.⁸⁸ Before the Camp David Accords, the Carter administration believed that Egypt and Israel were ready to sign a separate peace deal focused on the Sinai, and if they did so they would not be motivated to come to Camp David to negotiate on the broader package of issues.⁸⁹ It appears that US influence may have been more important for the type of multifaceted deal that the US preferred to see in the Middle East, and perhaps less so for the treaty between Egypt and Israel.

Finally, although the incremental trust building explanation suggested that the 1979 Peace Treaty would build on the trust of two prior disengagement agreements, the evidence does not indicate that the prior treaties, or the states' record of compliance with them, featured in negotiations on the 1979 treaty. In his long account of the road to the peace agreement, Moshe Dayan does not mention either of the prior agreements. Other scholars have likewise noted that the 1975 Disengagement Agreement did not lead to new negotiation

⁸⁷Akehurst, see n. 51.

⁸⁸Laura Zittrain Eisenberg and Neil Caplan, *Negotiating Arab-Israeli Peace: Patterns, Problems, Possibilities*, Second Edition (Bloomington, IN: Indiana University Press, 2010), 42.

⁸⁹Stein, see n. 77, 251.

steps, and the following years are characterized by a lack of discussions.⁹⁰ When negotiations did restart in 1997, the change is more clearly attributed to Sadat's initiatives rather than anything new that had transpired in the implementation of the prior agreement.

A related idea on the benefits of incrementalism was popular with policymakers at the time, many of whom believed that a broader agreement would be more likely if the smaller issues could get solved first, such as military disengagement agreements between Israel and the Arab states.⁹¹ Interestingly, this is not in fact what happens with the 1979 Peace Treaty. Rather than resolving pieces such as territorial agreements with other Arab states first, the actors focused on one of the bigger issues first, the border between Egypt and Israel. The peace treaty actually takes the same approach with the thorniest issues as we already saw with the INF negotiation – it unties the package of issues into ones where there is possible agreement, and ones which are at impasse. In the Peace Treaty, Egypt and Israel did not deal with the issue of the Palestinians and the question of 1967 borders.⁹² A number of the impasses that came up in bilateral Egypt-Israel negotiations had to do with Egyptian attempts to link agreement over the Sinai to agreement over the Palestinian issue.⁹³ The treaty ultimately took a narrower approach than the Camp David Accords, and though it affirmed the state's commitment to the accords it did not try to create an additional concrete agreement on those issues.

⁹⁰Bassiouni, "An Analysis of Egyptian Peace Policy Toward Israel: From Resolution 242 (1967) to the 1979 Peace Treaty," see n. 56.

⁹¹Akehurst, see n. 51.

⁹²Ibid.

⁹³There are numerous stops and starts in bilateral contacts, and several points at which the US steps in to push progress forward faster. Dayan's account records a number of these, including one in April 1978, where the broader set of issues limits negotiations on the Sinai question. Dayan, see n. 64, 130. The need for US involvement appears to be along this broader set of issues however, rather than on the Sinai negotiations where there was more bilateral agreement.

5.5 A contemporary case: US-Iran negotiations

The goal with the US-Iran case is somewhat different than in the previous two cases. Due to the contemporary nature of the case, the findings are necessarily more speculative. But the case also creates an exciting opportunity to test the theory by predictions about outcomes that have only partially been observed, and where historical details have not yet been fully revealed. I therefore highlight the ways in which my theory provides a plausible explanation for the high monitoring agreement outcome, and identify how new data from the case can serve to test the theory in the future. The US-Iran negotiations is in a sense a fully external case – it is not part of the current dataset in Chapter 3, and it could not have even inspired the theory development because the key domestic political shifts and resulting JPA agreement occurred only a few months before this analysis was written.

Somewhat surprisingly, the INF and Iran cases are more similar than they appear, and focusing on the role of prior beliefs and volatility in domestic political conditions leads to the same treaty outcome prediction in both. At first glance, there seem to be many differences between the US-Soviet INF case and the recent US-Iran case. Unlike the INF, the Iran case is asymmetric, with one power far weaker than the other, and obligations to limit capabilities only undertaken by one side. There are wide technological and wealth disparities between the US and Iran, as compared to the parity we saw between the US and USSR. However, in both cases, a major leadership change in one of the states raised the possibility that the new leader would pursue a new policy with regard to weapons development or deployment. The uncertainty that this shift created among US policymakers contributed to more serious attempts by the US to negotiate, as well as compromises on both terms and verification intrusiveness to create a mutually acceptable agreement. In both cases we observe agreements with highly intrusive verification provisions, higher than have been previously used by both states.

The last five years of negotiations between the US and Iran on restraining Iran's nuclear program provide an important contemporary test case for my theory. The case demonstrates that a better understanding of agreement design is relevant not only for explaining the historical pattern of cooperation but also for how best to respond to emerging security cooperation challenges. In designing a security agreement with Iran, policymakers are trying to create a security institution that will mitigate the threats from Iran's nuclear program, and from Iran's perspective the threat of US political and military interference. The conditions under which such an agreement is likely to emerge have been unclear, and there are a number of different agreement forms which have been considered. For policymakers it is important to have a better understanding of when there might be key windows of opportunity for cooperation, and what kinds of changes on either the US or Iranian side could directly affect the likelihood and form of a mutually acceptable agreement.

The breakthrough in negotiations in Fall 2013, immediately following a significant change in the Iranian leadership, suggests that domestic political factors may have played a critical role in motivating both sides to sign an agreement with highly intrusive monitoring provisions. Since negotiations with Iran are still ongoing as of summer 2014, and the case is also so recent, detailed information on internal motivations of decision makers is limited. However, the pattern of prior beliefs, domestic volatility events, and an increase in the likelihood of cooperation in both 2013 and also in fall 2009, all support the predictions of my theory. As the case develops, and as information becomes more available, the new evidence will allow for further testing of the theory. I outline here the evidence in the case thus far, and what indicators we would expect to observe in the future if the theory is supported.

5.5.1 Baseline beliefs and costs of cooperation

Any possible agreement between the US and Iran involves Iran placing some limit on its nuclear program development and the US committing to cooperative behavior in broader

foreign policy areas, for example in ending sanctions or economic isolation of Iran, or not making further military threats. The information sharing provisions are carried out on the Iranian side with observation of Iran's nuclear activities. Because of this asymmetric nature of the agreement obligations, it is important to understand the kinds of costs that the US has in pursuing cooperation on an agreement, especially one with high monitoring provisions. The costs are in large part non-materials. Implementing highly intrusive inspections on more facilities does require more resources for the IAEA inspections team, though assessments on whether the resources burden is high or low have been mixed.⁹⁴ High monitoring is costly to the US in other ways. First, accepting a high monitoring agreement creates the risk that other information problems will be overlooked more than they had been previously. If Iran complies with the letter of the an agreement, but withholds other important information, it is likely that there will be pressure on the US to accept Iran's compliance and continue cooperation rather than raise questions about what might have been missing from the record. The IAEA will be in the position of having to accept information that is less than is not quite sufficient for assessing Iran's nuclear record, and essentially will have to settle because Iran gave the impression of compliance with the JPA.⁹⁵ Settling at a less than ideal point of info is costly for the US because it could mean the end of an international consensus on pressure on Iran to reveal and cease its nuclear activities. Others states could be satisfied where the US is not.

Relatedly, if the US accepts a high monitoring agreement with Iran, this move would likely undermine other US efforts to restrain Iran's program. A deal with higher monitoring

⁹⁴In 2011, the Federation of American Scientists assessed that facility specific inspections or special inspections would require more resources. Ali Vaez and Charles D. Ferguson, *Towards Enhanced Safeguards for Iran's Nuclear Program* (Federation of American Scientists, FAS Special Report No. 2, 2011) However, in assessing the 2013 JPA Agreement, Mark Hibbs noted that IAEA would require little additional resources to inspect the more weapons facilities, and the costs to the US would be around 12 million, a fraction of the budget already being spent on Iran verification work. Mark Hibbs, "Verification and the Iran Deal," *Trust and Verify*, Jan. 7, 2014.

⁹⁵Hibbs notes this dilemma with even the very intrusive provisions of the JPA. *ibid*.

provisions means a stronger commitment by Iran to comply, which would sufficiently reassure many of the states who would participate in a multilateral sanctions regime against Iran. If Iran then cheated on the agreement, it is not clear whether it would be easier or more difficult for the US to apply the same sanctions punishment it had held previously. On one hand, the momentum of a complex sanctions building effort could evaporate and key players such as Russia and China will no longer lend their support. On the other hand, a sufficiently clear and public violation of the deal by Iran could help the US make a clear case internationally that sanctions are required. The issue as far as “costs” for the US is in the risk that accepting arms control will be at the expense of other policy options.

As in the previous cases presented in this project, understanding the baseline beliefs that the adversaries hold about one another’s incentives for cooperation is an important starting point for assessing the theory predictions. It is clear that in the Iran-US case, both sides held strong beliefs that the opponent was a “competitor” type that had high incentives to cheat on any agreement. The US had evidence that Iran had for years been pursuing a nuclear weapons capability, even though questions remained as to whether Iran sought to build a weapon as quickly as possible or to hedge and acquire nuclear technology.⁹⁶ By fall of 2007, Iran had 3000 operational centrifuges at its uranium enrichment facility at Natanz, which would give Iran the capacity enrich enough uranium for one nuclear weapon in about a year. Although the Obama administration tried to pursue diplomacy when it came into office, there was considerable skepticism that negotiations would succeed in bringing about an agreement to restrain Iran’s nuclear program.⁹⁷

From 2006 to 2008, the UN Security Council passed five resolutions which found

⁹⁶A 2007 US National Intelligence Estimate assessed that Iran had ceased weapons activities in 2003, but the ongoing growth in Iran’s enrichment capabilities. National Intelligence Council, *National Intelligence Estimate – Iran: Nuclear Intentions and Capabilities*, Dec. 10, 2007.

⁹⁷On this point Marashi (2012) cites leaked State Department cables on senior level US-EU discussions from March and April 2009. Reza Marashi, “Dealing with Iran,” *Cairo Review* (July 2012).

Iran in noncompliance with its Nuclear Nonproliferation Treaty obligations and threatened sanctions if Iran failed to comply. There were ongoing proposals offered during this time by the P5+1 and Iran, but little if any narrowing of the relative positions.⁹⁸ In September 2009, Iran revealed that it had constructed a secret uranium enrichment facility at Fordow.⁹⁹

At the same time Iranian leaders held deep suspicions that the US ultimately wanted regime change in Iran, and would seek an agreement to restrain Iranian capabilities while using the access, limitations, and time to undermine the Iranian regime.¹⁰⁰ The evidence on Iranian assessments is speculative, but when more details are available, I would expect to see even more explicit beliefs that the US would use an agreement, and even the information provisions themselves, to gain an advantage over the Iranian regime.

The underlying beliefs of deep suspicion have been fairly constant for the Iran-US dyad for about a decade, and these have been the starting point for any attempts at cooperation. There have not been any even temporary periods of detente. The theory suggests that under these conditions, formal agreements are not likely because the level of information that would be needed to address the belief of likely cheating is too costly for the states to accept over the status quo. Agreements are more likely to emerge if there is an increase in uncertainty in these beliefs. As outlined in the next sections, the two instances where steps have been made towards an agreement have indeed been characterized by uncertainty about Iran and a new possibility that Iran may have cooperative incentives.

⁹⁸For a good overview of the pattern of proposals back and forth, see the Arm Control Association's factsheet, History of Official Proposals on the Iranian Nuclear Issue, available online at <http://www.armscontrol.org/factsheets> (January 2014).

⁹⁹US intelligence had known about the facility, and it is likely that Iran reported it publicly in an effort to preempt the accusation of having an undeclared facility.

¹⁰⁰In an op-ed, United States Ambassador to Afghanistan and Iraq Ryan C. Crocker, called Iran's fear of US intentions to overthrow the regime a "virtually limitless" paranoia. Ryan C. Crocker, "Talk to Iran, It Works," *The New York Times*, Nov. 3, 2013.

5.5.2 Fall 2009: social unrest and the fuel swap deal proposal

In the recent history of the Iranian nuclear program and US efforts to restrain it, the most promising moments for a negotiated agreement came about following domestic volatility in Iran. The various ups and downs in US efforts to pressure Iran to abandon its nuclear program are too numerous to go into detail here, and have been well documented by other sources. In the last decade, there have been numerous proposals by the EU and P5+1 and by Iran as well that have not resulted in an agreement.¹⁰¹ So while the negative cases are numerous, with repeated periods of no agreement outcomes, there been a couple notable shifts in negotiations which suggest an increase in the probability of an agreement.

Prior to the 2013 JPA deal, the last moment of serious negotiations was in Fall 2009, when the US and Iran tried and failed to sign an agreement to reduce Iranian stockpiles of highly enriched uranium. Although an agreement did not come about, my theory would suggest that it was relatively more likely following a period of increased uncertainty about Iranian incentives for cooperation. The evidence is highly suggestive that this indeed was that case. The negotiations took place immediately following massive demonstrations in Iran protesting the June 2009 elections. The Green Revolution was a serious sign of volatility in Iran, and it was unclear to Western observers as to how the Iranian government would respond. While the demonstrations were not a direct critique of nuclear policy or the lack of cooperation with the West, the demands for greater government attention to social welfare and more public participation in politics could have an impact on foreign policies that were steadily isolating Iran from international markets.

During the demonstrations, the Iranian government was fully focused on the domestic situation, but as the unrest died down the US proposed a deal that would limit –at least

¹⁰¹The most serious previous opportunity for cooperation was in 2003-2004, when the Iran and the EU signed a series of agreements under which Iran would voluntarily suspend enrichment and reprocessing activities. These agreements did not introduce monitoring or verification provisions. In June 2004 the IAEA condemned Iran for failure to comply with inspections and engaging in other deception efforts.

for a short period— Iran’s capability to produce a nuclear weapon. The US offered Iran a trade: Iran would ship the majority of its highly enriched uranium out of the country, and in exchange Iran would receive fuel for the Tehran Research Reactor, which Iran needed at the time.¹⁰² In September 2009, Iran agreed to negotiations, and at an October meeting they accepted the US proposal. Meeting in Geneva two weeks later, the Iranians began to raise concerns and effectively backed out of the deal. Frustrated at the lack of cooperation efforts, the US went back to its status quo position of pursuing sanctions, and by November these efforts were gaining more traction internationally than they had previously.¹⁰³

Further evidence is needed on why exactly the deal fell apart, and will likely be ultimately only available from Iranian sources. Following Iran’s initial acceptance, US negotiators were at first optimistic, but at the next meeting in Vienna the Iranian began to back track. Ahmadinejad had actually been a supporter of the deal, but he faced strong domestic critique over the deal from the hardliner Revolutionary Guard, nuclear negotiators, and even reformers.¹⁰⁴ If it is the case, as theory suggests, that the US was uncertain about Iranian incentives following the summer demonstrations, then the failure of the deal due to domestic pressure in Iran is evidence of that uncertainty being warranted, as Iranian positions were turning out to be more of the same competitive approaches rather than serious efforts to pursue longer term cooperation incentives.

The full effect of the political unrest on the potential for an agreement is not entirely

¹⁰²While the fuel swap deal is an indicator of greater opportunity for formal adversarial cooperation in this case, the deal does not provide a clear test of choices over monitoring provisions. It had arms control types of goals (restraining the program), but it did not have provisions on which either party could “cheat” or “defect” in the arms control sense. If either side failed to live up to its end of the bargain of delivering the agreed upon fuel supplies, it would be immediately apparent as a completely public breach of what is essentially a sales agreement.

¹⁰³The signal of disinterest in negotiations from the Iranian side, combined with the successful progress on sanctions (including support from China and Russia), likely contributed to US assessment that it could bear the costs of the status quo for longer, and instead of making compromises to get an agreement, try to increase the costs of non-cooperation for Iran.

¹⁰⁴Robert Einhorn, interview with the author, May 15, 2014. For a similar account, see: Marashi, see n. 97.

clear without further research and data which may only become available later. For example, it is possible that demonstrations undermined the Iranian government's ability to negotiate with the US. However, the timing of the demonstration in the summer, Iranian President Ahmadinejad being sworn into his second term in August, and then negotiation restarting in September are suggestive of the unrest having an effect on beliefs and choices prior to the negotiations rather than in undermining them.¹⁰⁵ Former senior Obama administration official Robert Einhorn noted in an interview he suspected that the Iranian government was probably in the position of having "no choice but to engage" with the West following legitimacy concerns from the contested elections, protests, and government crackdown.¹⁰⁶ News reporting from the time also suggests an uncertainty in the Obama administration in mid-summer 2009 at the height of the demonstrations regarding Iran's nuclear-related policy. Officials expected Ahmadinejad might either seek renewed legitimacy for the regime by negotiating with the US, or again backing out of negotiations.¹⁰⁷ The Fall 2009 period shows preliminary indication that social unrest increased US willingness to risk cooperation with Iran, and Iranian interest in at least appearing to be willing to cooperate.¹⁰⁸

¹⁰⁵Some demonstrations continued though February 2010, but in a more limited way than from June through early August 2009. The argument that social unrest undermined the deal was made by some experts in 2009. See for example: Michael Slackman, "Iran's Politics Stand in the Way of a Nuclear Deal," *The New York Times*, Nov. 3, 2009

¹⁰⁶Robert Einhorn, see n. 104.

¹⁰⁷David E. Sanger, "Despite Crisis, Policy on Iran Is Engagement," *The New York Times*, June 6, 2009.

¹⁰⁸A key question for future testing of the theory would be whether US policymakers saw domestic pressure on Iran and as a result became less certain of their prior belief that the Iranian leadership would try to renege on any sort of cooperation. Under this view, the fuel swap proposal was an early step to test the water of possible Iranian interest in an international commitment, perhaps on the level of a missile deployment freeze that the US and Russia might voluntarily agreed to as signal of interest in negotiations during the Cold War. I would expect that following the fuel swap deal, the US would have begun to consider a high monitoring agreement, perhaps with some compromises on the US side to make the deal acceptable. As discussed for the JPA analysis below, in 2013 the US made a big concession in allowing Iran to keep uranium enrichment on its territory. If the social unrest had the effects my theory suggests in 2009, and the US indeed saw a possibility that Iran might comply with an agreement, then it is possible that we would see evidence of at least considerations on the US side of making the enrichment compromise during that period in order to get essentially a JPA deal earlier. However, the issue of allowing Iran to keep enrichment remains highly controversial, and I do not expect any earlier considerations of a compromise,

5.5.3 Summer/Fall 2013: A new leader elected and the Joint Plan of Action signed

After a number of years without negotiations or any moves towards a negotiated agreement, the US and Iran restarted formal negotiations in the Fall of 2013 and in November signed the first serious agreement limiting Iran's capabilities.¹⁰⁹ Although temporary, the agreement did create a substantial restriction on Iran's ability to continue its nuclear program and included highly intrusive information provisions, including daily observation of key facilities, which went beyond Iran's prior international commitments.

After multiple failed attempts at cooperation, and experiences with the Iranians walking away from the negotiating table after delays that were perhaps strategic in giving them time to build up capabilities, why was the US willing to risk accepting an agreement at all, and also willing to invest in costly information features? At the same time, why was Iran willing to accept considerable restraints on its program in 2013 but not earlier? A key test of the causal logic of my theory is whether the move towards a high monitoring agreement (particularly from the US side) can be attributed to uncertainty in beliefs about Iran created by domestic political volatility in the summer of 2013.

In the spring of 2013, the US was carefully observing political developments in Iran, and trying to figure out whether there might be a window for cooperation. Several attempts at restarting negotiations in the fall and winter met with impasse, but in the spring of 2013 the US and Iran engaged in a secret bilateral negotiation channel. Although no specific steps towards an agreement were made during this time, the channel is an indication of US attention to developments in Iran, particularly political changes that were likely to emerge in the

if they did exist, would be revealed publicly for some time.

¹⁰⁹Between Spring 2010 and Spring 2014, there were few diplomatic efforts to address the nuclear issue. The EU and P5+1 were disappointed with meetings with Iranian interlocutors for much of 2011. In May 2012 the P5+1 made a proposal that Iran rejected.

June 2103 election. With Iranian President Ahmadinejad on his way out, US policymakers carefully watched the emerging configurations in Iranian domestic politics.

The Iranian elections in the summer of 2013 included a field of five candidates, with no clear front runner. At the start of the election, centrist candidate Hassan Rouhani appeared unlikely to win, but he also started to benefit from an alliance between the reform movement and a center-right faction.¹¹⁰ On June 14th Rouhani won the election and started to form a government with more centrist leaders. Direct contacts with the US quickly increased; in September the US Secretary of State and Iranian Foreign Minister met on the sidelines of a UN summit, and the following day President Obama and President Rouhani spoke by phone. After the elections, the back channel negotiations that had been going on for a few months began to gain more serious traction.¹¹¹ The P5+1 talks with Iran resumed in October 2013, and were paired with rounds of bilateral meetings between the US and Iran as well.¹¹²

A survey of some available US responses to Rouhani's election suggests that policymakers in the US were optimistic but very cautious about the possibility of changes in Iranian foreign policy. On one hand, it is possible that Rouhani really had these ideas, and would be able to change Iranian policy away from explicit nuclear weapons pursuit. There are some important signs supporting this view. First, Rouhani had been elected by popular support on a platform that supported a better balance between the nuclear program and Iran's economic needs. During the election, in a video that aired for millions of Iranians, Rouhani defended his record on nuclear negotiations and said, "Its very beautiful if a centrifuge revolves, but on the condition that the country is revolving as well."¹¹³ Senior government officials in the US have commented that with the election they saw, "an actual

¹¹⁰Suzanne Maloney, "Why Rouhani Won – And Why Khamenei Let Him," *Foreign Affairs* (June 2013).

¹¹¹Laura Rozen, "Exclusive: Burns led secret US back channel to Iran," *Al-Monitor*, Nov. 24, 2013.

¹¹²Laura Rozen, "Three days in March: New details on how US, Iran opened direct talks," *Al-Monitor*, Jan. 8, 2014.

¹¹³"Rouhani's Biopic Surprises Iranian Voters," *Al-Monitor*, June 5, 2013.

mandate for Rouhani to govern in a different way and to conduct foreign policy in a different way.”¹¹⁴ Second, Rouhani had been Iran’s lead nuclear negotiator in 2003-2005, and in 2003 had brokered an agreement with the EU that suspended some of Iran’s nuclear activities. The deal fell apart two years later (with support from the Supreme Leader for a return to the nuclear program), and while the experience had earned Rouhani a reputation as a pragmatic and diplomacy oriented leader among Western observers, internally in Iran he was criticized by hardliners and at time spoke out against Ahmadienejad’s policies.¹¹⁵

Western observers also viewed Rouhani’s cabinet changes as a possible indication of shifts in Iran’s security interests. Rouhani has not appointed known reformers, but has instead elevated technocrats with deep economy experience.¹¹⁶ Most importantly, in August 2013 Rouhani appointed Mohammad Javad Zarif as Foreign Minister. Zarif was well known among Western diplomats as someone who was more sympathetic to Western views.¹¹⁷ In a quote that is reminiscent of Secretary Shultz’s impressions of new Soviet Foreign Minister Shevardnadze in 1985, Senator Diane Feinstein said of Javad Zarif, “He doesn’t play games.... He doesn’t produce incendiary sentences. He is thoughtful. He is real.”¹¹⁸

On the other hand, US policymakers saw that the 2013 leadership change could also bring of the same (if not worse) in terms of future Iranian intentions. Even if Rouhani

¹¹⁴White House advisor Ben Rhodes, quoted in Robin Wright, “The Adversary: Is Iran’s nuclear negotiator, Javad Zarif, for real?” *The New Yorker* (May 26, 2014)

¹¹⁵Suzanne Maloney, *Iran Surprises Itself and the World - A new president may take his country in a new direction* (Brookings Institution, 2013).

¹¹⁶Some policy experts commenting on the election noted that personnel changes in the key ministries and institution would be a way for Rouhani to move Iranian foreign policy towards compromise. Max Fisher, “Iran’s next president, Hassan Rouhani, seen as best hope for ending nuclear standoff with West,” *The Washington Post*, June 15, 2013; Maloney, *Iran Surprises Itself and the World - A new president may take his country in a new direction*, see n. 115.

¹¹⁷Zarif was educated in the US, and served as Iran’s envoy to the UN in 2002. During that time, Zarif had been the architect of a “grand bargain” proposal for negotiations with the US, which had failed to gain traction. For a good profile of Zarif see: Wright, see n. 114.

¹¹⁸Feinstein, who first met Zarif in 2006, is quoted by Robin Wright: *ibid.*

appeared at first to have new ideas and western approaches, he could ultimately be more in line with hard line clerics than he let on. Indeed, Rouhani only looked like a reformer in comparison to other politicians competing for power; during the time when reformers were more prominent in the early 2000s, he would not have been a part of that group.¹¹⁹ Rouhani was a political insider in the security sphere, and former White House Coordinator for Arms Control and Weapons of Mass Destruction Gary Samore cautioned that US policymakers should not expect Rouhani to suddenly oppose a nuclear option which Iran has been pursuing for decades.¹²⁰ There have also been prior Iranian leaders who have appeared more west-friendly at first but then turned out to not be reformers.¹²¹

Western observers also do not clearly know what Rouhani's new engagement approach really means. Some of the "new ideas" may not be in the US favor; Rouhani actually opposed cooperation in 2009 and sharply criticized the fuel swap deal which Ahmadinejad had in fact supported.¹²² In a January 2014 interview, one of the lead US negotiators Deputy Secretary of State William Burns was asked whether following the Iranian election he saw that the Iranian positions were different from those held previously, whether they were wholly new or whether there was continuity. Burns's hedged response is indicative of the uncertainty surrounding such assessments; he called the issue complicated, the path difficult, and negotiators professional.¹²³

¹¹⁹Karim Sadjadpour, *Iran's Presidential Election: An Autocracy Votes* (Carnegie Endowment for International Peace, 2013).

¹²⁰Gary Samore quoted in: Wright, see n. 114.

¹²¹In 1997, Mohammad Khatami won the election with promises of reform, but ended up upholding the orthodox line, particularly in foreign policy and the nuclear issue. Maloney, *Iran Surprises Itself and the World - A new president may take his country in a new direction*, see n. 115.

¹²²*Ibid.*

¹²³The transcript of the interview is available at Laura Rozen, "Burns to Al-Monitor: 'No illusions' about nuclear diplomacy with Iran," *Al-Monitor*, Jan. 16, 2014. In the interview, Rozen asks another interesting question that would provide a good test for my theory that it is uncertainty from the political change itself, rather than what is known about the views of the new leader, that creates an opportunity for cooperation. Rozen asks, "Would it have been possible to make progress had [former Iranian nuclear

Most importantly however, even genuine intentions by the new leader could be no match for the interests and control of other groups in the Iranian government. After all, the Supreme Leader still largely controls nuclear policy, and it is clear that other hard liners have not simply disappeared and may still be very much in control of nuclear decision making. Throughout the September and October negotiations, the sense among US observers was that Rouhani would soon face domestic pressure from hardliners. Although welcomed by Western observers, Foreign Minister Zarif also quickly faced opposition by Iranian hardliners for being too Western.¹²⁴ For some in the US government, Rouhani's apparent moderation is a "dangerous deception" that could be intended to undermine the international consensus for sanctions pressure.¹²⁵ In effect, the leadership change has created uncertainty — a possibility that Iran will move away from nuclear weapons intentions, but also a possibility that they are as intent on gaining this capability as before, and maybe even more intensely.

Iran signed the Joint Plan of Action with the US (or more accurately, the P5+1 including United States, United Kingdom, China, Russia, France, and Germany) on November 24, 2013.¹²⁶ Under the Joint Action Plan, Iran committed to not enriching uranium past 20%, diluting existing material down to the 20% level, and stopping construction of the Arak heavy water reactor. In exchange, the US agreed to lift some of the sanctions and unfreeze

negotiator Saeed] Jalili been elected president?" Burns does not have an answer, but also does not simply reject the possibility. He also suggests that the meetings before the election in March 2013 were not as promising as after the election with the new negotiating team in Iran, when there was a "clear sense of purpose on both sides." Future research on US negotiators' views of this counterfactual (particularly when they are able to speak about the period more freely) would allow for an interesting test of the theory.

¹²⁴Wright, see n. 114.

¹²⁵Maloney, *Iran Surprises Itself and the World - A new president may take his country in a new direction*, see n. 115.

¹²⁶For the full text of the Joint Plan of Action, see "Joint Plan of Action," Nov. 25, 2013, European Union External Action. See also the EU Factsheet on the JPA: "E3/EU +3 nuclear negotiations with Iran: Terms of the agreement on a Joint Plan of Action, including measures to be undertaken by the European Union," Jan. 17, 2014, European Union External Action.

some Iranian assets abroad. The JPA agreement includes several information features which go beyond Iran's existing commitments under the Nuclear Nonproliferation Treaty. Iran has to submit additional information on facilities engaged in nuclear work and allow the IAEA daily access to observe centrifuge installations, as well as access to monitor centrifuge manufacture and storage. These steps are all beyond the existing activities of the IAEA in Iran.¹²⁷ The agreement is a temporary restraint - it is intended to verifiably pause Iran's development of nuclear capabilities while a comprehensive agreement is negotiated. The JPA can be extended once for another six months if an agreement is not reached. Although temporary, the magnitude and pace of Iran's nuclear development suggests that a year of limitation does significantly restrain their ability to seek nuclear breakout during this period; if Iran made the political decision to pursue weaponization a year could be the difference between a nuclear weapon and a latent capability.

5.5.4 US-Iran case assessment

The US-Iran relationship and cooperation case does not yet provide definitive support for the theory, but the pattern of negotiation and outcomes does suggest that the proposed logic is likely operative in this case. Further research would be needed to better compare the conditions that differentiate the non-cooperation periods between the US and Iran with moments where cooperation is more likely or actually successful.

Although there are important indicators in the Iran case to suggest that domestic political volatility and the uncertainty it created had an effect that is separate from (though likely additive to) other factors which also contributed to the likelihood of an agreement, it is also difficult to isolate the extent to which the volatility is responsible for the shifts in cooperation outcomes that we observe.

¹²⁷For a description of these verification issues in context of prior IAEA activities in Iran and other countries, see: Hibbs, see n. 94.

There are two potential confounding factors in the Iran case. First, Iran's capabilities increased substantially over the last decade and also between 2009 and 2013. The increase in the threat posed by Iran's nuclear program could have made an agreement more likely because the US became more willing to compromise its own terms in order to restrain Iran's capacity. At the same time however, the threat level explanation appears incomplete. Although Iran's technical capability has indeed increased, the US has been concerned about Iran being close to a nuclear weapon for several years, and US leaders have publicly identified restraining the Iranian program as a top level security priority for years as well.¹²⁸ So while the US assessment of the threat level as high has been relatively constant for the last five to six years, agreement opportunities have been infrequent and the JPA deal is the first instance of new verifiable limitation.¹²⁹

Second, in the winter of 2012-2013, the US and EU began applying considerably more serious sanctions on Iran than had been in place previously. These sanctions included both limits on Iran's ability to interact with the international financial system and also included oil sanctions. The sanctions increased the costs to Iran for continued failure to cooperate (and also costs to the US and EU in applying the sanctions) so with a costlier status quo the likelihood of an agreement increased. However, while force of the sanctions on Iran's security calculus is clearly a factor, it was not completely clear to the US whether that calculus was actually changing, or whether the regime would be able to maintain its nuclear ambition despite economic pressure. In February 2013 for example, the sanctions had already been in place for six months, but Iran continued to be intransigent in negotiations.¹³⁰ While it likely

¹²⁸The general consensus in assessments by US intelligence and independent scholars in the last few years has been that Iran was making steady progress towards a breakout capability but had not made a political decision to build a bomb. See for example, James Clapper, *Unclassified Statement for the Record on the Worldwide Threat Assessment of the US Intelligence Community for the Senate Select Committee on Intelligence* (<http://www.intelligence.senate.gov/120131/clapper.pdf>, 2012).

¹²⁹For a useful overview of the history of Iran nuclear threat estimates, see, Scott Peterson, "Imminent Iran Nuclear Threat? A Timeline of Warnings Since 1979," *The Christian Science Monitor*, November 8, 2001.

¹³⁰A meeting of the P5+1 and Iran took place in Almaty, Kazakhstan on February 26-27. After this meeting,

took time for the full weight of the sanctions to be felt by the Iranian economy, by Fall 2014 Iran had been under pressure for some time but had failed to come to the negotiating table earlier. Even if the sanctions had essentially made Iran a likely cooperator, the US needed indication that this change in foreign policy was happening, which the election outcome provided. In this sense, we could interpret the sanctions as a key factor in motivating Iran to come to the negotiating table, and the domestic volatility as a key reason for the US to be willing to take the risk that Iran's shift was genuine.

It is also possible that the sanctions created the economic conditions that led to the election favoring a more moderate presidential candidate. Scholars who have analyzed the drivers of the Iranian election results note that it was not only the economic situation (including the devaluation of currency and new austerity measures) but also “the erosion of their basic rights and freedoms over the past eight years” which motivated Iranian voters.¹³¹ It was also somewhat surprising that Supreme Leader Ayatollah Khamenei let the election results stand and did not oppose Rouhani's campaign earlier to guarantee the election of a conservative candidate. The evidence here is unclear, but Iran scholar Suzanne Maloney convincingly speculates that Khamenei intentionally allowed the moderate victory in order to facilitate a resolution to the sanctions and dispute with the West.¹³² Importantly there are two contributing factors here: the sanctions that were causing increasing pressure *and* Khamenei's political decision to pursue a more conciliatory foreign policy.

Other possible explanations for arms control agreements which have been reviewed in this project are even less likely to account for the Iran case. There is no history of cooperation or even incremental building towards an increasingly intrusive agreement. In fact, confidence

US officials held a secret bilateral meeting in Oman. While the meeting was a sign of some Iranian interest in negotiations, little substantive progress was made. Rozen, “Three days in March: New details on how US, Iran opened direct talks,” see n. 112.

¹³¹Maloney, “Why Rouhani Won – And Why Khamenei Let Him,” see n. 110.

¹³²Ibid.

building measures have been routinely proposed in the negotiations and rejected.¹³³ This is also not a case where there is stability in expectations about Iran's intentions or Iran's capabilities. Rather, the periods of stability are when we do not see progress in cooperation; when Ahmadinejad held a firm grasp on Iranian security policy, and the US was fairly certain of Iran's opposition to cooperation, there were few promising moves towards an arms control agreement.

Iran is an important test case for my theory because it is a very difficult case for cooperation. Both sides have very strong incentives to secure a security advantage now rather than rely on the adversary to uphold its promise for restraint in the future. The classic approaches to arms control, as feature of Cold War competition, or as only possible under conditions of parity, stability, and high confidence, do not apply to the contemporary US-Iran standoff. Yet although numerous factors point to the difficulty of reaching an agreement, the magnitude of the threat from an Iranian nuclear weapon, and the priority placed on this problem by policymakers from both US political parties, point to the importance of better understanding the conditions under which one might nonetheless be at least somewhat more likely.

With the JPA, the US made a major concession to Iran. It accepted an agreement that allows uranium enrichment on Iranian territory, though under very high monitoring. Pundits commenting on the compromise note demands for no enrichment will be a deal-breaker for any follow-on agreement, and they are likely right. But, if this is the case in 2013, it was also the case for at least the last few years. Previously though, the US was unwilling to make this change. Why was the US willing to take a risk with a compromise

¹³³For example, in February 2013 at meeting in Almaty, Kazakhstan, the P5+1 proposed "voluntary measures" for Iran to suspend enrichment beyond 5%, in addition to limits that would require enhanced inspections, but these proposals were rejected. Scott Peterson, "World powers expect Iran to be ready for progress at next nuclear talks," *The Christian Science Monitor*, Apr. 4, 2013. For full text of the proposal, see: Laura Rozen, "The P5+1 nuclear proposal to Iran in Almaty: Document," *Al-Monitor*, June 9, 2013.

on cooperation in 2013?

My theory provides a compelling answer. With the change in Iranian leadership, the US is less certain that Iran just plans to cheat, and sees at least some greater probability that Iran actually intends to cooperate and not pursue a nuclear weapon. Before, the US could only agree to back off its high pressure status quo if it was completely sure that it would catch any attempts by Iran to weaponize, and the key way to achieving that certainty was no enrichment. The demand was too costly for Iran, and under these conditions, no agreement between the US and Iran was possible. However, as uncertainty increased, the US became willing to take the risk that Iran's incentives were not as surely competitive as previously believed. The agreement embodies that risk acceptance. It makes the compromise that is necessary to go from no cooperation to a formal agreement outcome, but at the same time invests material and non-material costs in trying to mitigate the danger of defection as much as possible. With the high monitoring, the US will not be as perfectly assured that Iran is not pursuing a nuclear weapon as it would under the no enrichment option, but with the change in beliefs about Iran's intentions, it no longer needs to be.

5.6 Conclusion

In this chapter, I have presented three cases where there is strong indication that domestic political volatility created the uncertainty that motivated adversarial states go from periods with no security institutions to signing agreements that limit their capabilities and actions. While more data, especially from primary sources, would allow for more in-depth tracing of the causal connections in all three cases, the patterns of prior beliefs and incidence of domestic volatility are consistent with the theory expectations for both the general hypothesis that volatility should contribute to a higher likelihood of treaties over all, and for the conditional hypotheses that under different conditions of prior beliefs, we would expect different forms

of treaties to emerge.

This chapter has shown the effects of two types of domestic political volatility, top-down leadership shifts and bottom up social pressures. With the leadership changes, in each case we can observe that observing states become uncertain about a new leader's intentions. The evidence suggests that there is good reason for uncertainty even when some information about the new leader is available in advance. Both Menachem Begin and Atal Bihari Vajpayee took aggressive lines on regional adversaries during their electoral campaigns but then adopted more cooperative strategies once they assumed office. In Iran, Hassan Rouhani's prior positions gave only speculative indication of a more moderate approach, and his capacity for implementing real change in security policy remains unclear. Popular protest have also played a role in creating a pressure on governments in Egypt and Iran to seek some changes in foreign policy. The seriousness of those shifts have been difficult for international observers to assess, and as the Iran 2009 case suggests, they can be more public relations than substantive change. Both types of domestic volatility had an impact on the foreign policies of the state where the volatility occurred, and importantly on the perceptions of that state by international adversaries. In each case, security institutions emerged from moments of increased uncertainty about the adversary's incentives for security cooperation.

A comparison between the Egypt-Israel and India-Pakistan cases reveals some interesting results on the distinction between high and low monitoring treaty outcomes. The two cases have striking similarities as long standing rivalries characterized by: a cultural and religious component; disputes over territory and repeated militarized conflict; and international pressure to resolve their conflict or at least diminish the intensity of their competition. A key difference however is the baseline beliefs condition that exist prior to each treaty negotiation. The India-Pakistan case shows that low monitoring agreements can emerge when even bitter adversaries find themselves temporarily holding "cooperator" expectations for some issue. Domestic political shift raises concern that this truce could change so states seek to

bolster the cooperation they already have with low cost but now formal agreements. For the India-Pakistan dyad, the areas where such expectations have occurred include political level intent for longer term stability and economic development and an acceptance of ongoing tension desire to avoid inadvertent conflict escalation. On the other hand, the Egypt-Israel case demonstrates that when states start at a baseline of strong expectations of likely cheating, with no detente on even minor areas of cooperative activity, we see that an increase in uncertainty about those prior held beliefs can contribute to both sides making restraint commitments which include tools to observe violations, which they are still very concerned could happen. Consistent with the theory, these different starting points, combined with political volatility, lead to low and high monitoring treaty outcomes respectively.

Finally, in all three cases, the evidence also suggests that other drivers of agreement design likely play a role as well, particularly relative power dynamics and the involvement of third parties. For example, in both the India-Pakistan and Egypt-Israel cases the US created conditions which were more favorable for an agreement, through pressures on the parties, incentives, and direct mediation. In the US-Iran case, the threat of an Iranian nuclear weapons capability has continued to grow. However, these other drivers are also relatively constant over the periods observed, so often fail to explain why agreements that would be beneficial to both sides in diminishing the costs of security competition do not emerge sooner. These underlying factors do not give many clues as to why a particular form of agreement emerges.

On the other hand, support for an explanation based on socialization is limited in these cases. The concept that states may become more acceptant of increasingly intrusive security treaties following participation in more limited low monitoring agreements or though participation in other security regimes has not been borne out in these cases. India and Pakistan have had plenty of exposure to confidence building measures, both through their own agreements and though contacts with Western experts, but did not choose to apply

inspection and monitoring tools in the Lahore Declaration. The US has experience with all kinds of agreement forms, and Iran has participated in international security regimes as well. An international norm that favors negotiated solutions may be one factor that keeps these two states at least engaged in ongoing talks. However, neither prior treaty experience nor the threat of international opprobrium has been enough of a motivator for reaching an agreement. With Egypt and Israel, if socialization or norms play a role it is in the reverse direction from security cooperation; norms of territorial integrity and sovereignty appear to trump any social or normative pressure for arms control agreements.

Chapter 6

Conclusion

In this final chapter I provide a summary of the theory and findings presented in this project and identify areas for future research. The combination of large-n statistical testing and historical case study has provided a multifaceted approach to the questions of adversarial agreement design. As I review in the next section, support for the theory comes from different types of data and forms of analysis. The new data and project findings also create opportunities for research questions, both on other characteristics of treaty forms and on treaty effectiveness. Following a note on such future steps, this chapter concludes with a discussion on the implications of my theory and findings for policy decision making on arms control issues and the evolution of security institutions in response to emerging threats.

6.1 Summarizing the Findings

I have argued in this project that we can explain the occurrence and the form of formal security institutions by looking at the role of uncertainty about the adversary's incentives to cooperate, and the domestic political factors which create that uncertainty. The theory I develop takes agreement design as a process of strategic bargaining and expectations about

the other player. While there may be factors which motivate individual states to pursue arms control agreements (some of which I incorporate into the statistical tests of the theory), I focus on the issues that come from the interaction of the two states, and on security institutions as responses to the competition that exists between them.

The theory combined a game theoretic treatment of treaty design with a non-formal theory discussion of why we might observe a move from one equilibrium outcome, such as no treaty signed, to another equilibrium outcome, such as a high monitoring agreement. The formal model makes two important contributions. First, by including two-sided incomplete information about player types, I model a key characteristic of adversarial relationships that is often not incorporated into simpler models. States are never able to perfectly assess the intentions of their opponents, and are always concerned some opponents may seek a relative advantage even when cooperation offers long term mutual benefits. The model thus captures each side's uncertainty over whether the opponent is a Cooperator type playing a coordination game or a Competitor type playing a prisoner's dilemma.

Second, the model introduces imperfect monitoring of players' actions in implementing an agreement. This approach likewise reflects a fundamental problem in arms control; states cannot easily observe whether the opponent cheated, and an opponent that does cheat has clear incentives to hide their defection and continue taking advantage of the other side in the future. Together, these two features of the model extend existing game theoretic work on treaty cooperation, and allow me to focus on the effect of beliefs about the adversary on the degree of costly monitoring which states select for an agreement.

The comparative statics of the model identify the levels of monitoring which would be selected in equilibrium under different conditions of beliefs. However, from the model alone, it is not clear how or why the conditions between states would change. The second part of Chapter 2 proposed an explanation for these changes, focusing in particular on the type of factor – domestic volatility – that is likely to make states uncertain about prior

held beliefs. The idea is that domestic political volatility can raise the risk that Cooperator types may have new incentives to cheat, or the opportunity that Competitor types may be willing to pursue long term cooperation after all. Importantly, domestic volatility does not fundamentally change beliefs about the adversary; the Soviet Union did not suddenly become a trusted cooperator in US estimation, and Egypt did not simply come to believe that Israel would prefer cooperation over keeping more territory.

I argue that there are two types of domestic political volatility, both of which have a potential impact on a state's foreign policy and which are likely to be observed by external actors. A new leader and/or new top level leadership in the government could bring with them new foreign policy priorities or new thinking on the role of international cooperation in addressing the state's security interests. From the bottom up perspective, social unrest in the form of demonstration or riots could motivate the government to reassess the division of resources dedicated to social good provision versus military spending, and thus alter its priorities on international cooperation options. With both top down and bottom up volatility, there is a possibility of a change away from the past policy, but there is also a possibility that the volatility will rather result in more of the same. A new leader may choose to uphold the policies of his predecessor or may lack the capacity to institute changes due to domestic opposition from other groups or bureaucratic actors. A government's response to social unrest can also be mixed; a policy change is one option, but the state could also repress protest or seek diversionary military activity to distract from problems at home.

Volatility thus has two related effects: it has the potential to affect the state's type, for example turning likely competitors like the USSR into types that have rather low incentives for cheating; and second, it can cause international observers to doubt their prior beliefs. However, it should be clear why the observer should not simply conclude that volatility brought about a change, or even believe claims by a new leader that new policies are underway. If the volatility in fact did not facilitate a change in state policy, and cheating

incentives are as high as before, an opponent that fails to guard against that will be more likely to be suckered by an agreement and violations. As the formal model suggests, a Competitor type always has an incentive to masquerade as a Cooperator and reap the benefits of undetected violations.

Since domestic political volatility increases uncertainty about a state's incentives to cooperate, the occurrence of these volatile moments should have an impact on the likelihood of arms control agreements. The hypotheses outlined in Chapter 2 propose a conditional relationship between prior beliefs about the adversary and an increase in uncertainty. If states were previously believed to be Competitor types, with high incentives to cheat, then an increase in uncertainty should make high monitoring agreements more likely. If states were previously believed to be Cooperator types, with low incentives to cheat, then an increase in uncertainty should increase the probability of low monitoring agreements. Rather than being a direct reflection of the model comparative statics, these hypotheses are derived from a combination of the formal model results and ideas about external drivers of belief change.

The results of large- n tests of the hypotheses in Chapter 3 show strong support for both conditional hypotheses on predictions for information provisions, and a more general implication of the theory on volatility being associated with higher likelihood of agreements in general. I show that for states that are likely Competitor types, the presence of either type of domestic political volatility makes high monitoring treaties more likely, but as expected this affect does not apply to low monitoring agreements. The results for Cooperator types are reversed – domestic political volatility makes low monitoring agreements more likely under most specifications tested, but has no significant effect on the likelihood of high monitoring treaties. The general hypothesis is strongly supported as well. Looking at all treaties in general rather than along divisions of provision types, domestic volatility is associated with a higher probability of cooperation occurring. A key advantage of the general hypothesis is that it tests the theory along a wider temporal range where data for the conditional

hypotheses was lacking.

The INF case study provided a different kind of support for the hypothesis, focusing in particular on the outcome of a high monitoring treaty. I compare two time periods during which a treaty on intermediate missiles between the US and USSR was possible. The periods are very similar along a number of parameters, suggesting the inadequacy of alternative explanations that focus on relative power or incremental trust building. Rather, I show how domestic political change in the USSR created uncertainty among US policymakers and allowed new assessments of cooperation incentives to emerge in the Soviet Union. As expected by the theory, we can observe previously held beliefs of likely cheating become less certain, and proposals for monitoring and verification shift from a level where they were too costly and unacceptable to both sides to a mutually acceptable position. At the same time, evidence on the Russian side shows that Gorbachev and his new cadre of senior advisers were likewise looking for signs that the US would be willing to cooperate in good faith. Following negotiations with American interlocutors, as well as indications that the US administration was facing critiques at home, the Soviet leaders also became willing to take the risk that the vehemently anti-Soviet President Reagan, who wanted a Star Wars program and called the USSR an “evil empire,” would be willing to pursue mutual restraint. Following these shifts, both sides reject the no-treaty status quo, or low monitoring types of framework agreements, in favor of a treaty that included highly intrusive information provisions.

I also show in Chapter 5 that there is strong indication that the findings of the INF case can be generalized to agreements that emerge under different conditions. The large-n analysis includes different types of adversarial agreements, and chapter 5 shows that the causal story suggested by the broader findings plausibly applies in non-US/Soviet nuclear restraint cases as well. While more research and access to primary sources would be needed to provide stronger proof of each case, I show that the Lahore Declaration between India and Pakistan and the 1979 Peace Treaty between Egypt and Israel both follow moments of un-

certainty generated by political volatility, while previous time frames are characterized by a lack of negotiations. As expected by the hypotheses, India and Pakistan sign a low monitoring agreement following a period of rare detente and expectations of mutual cooperation in at least some issues areas. Egypt and Israel perceive one another as likely competitor types across the board of issues areas, and create a highly monitored agreement after considerable difficulty in negotiations.

Overall, the project makes two empirical contributions which are likely to have an impact on future research. First, the INF case study re-examines the historical record and provides new material on how the treaty came about as a compromise on both sides. Primary evidence from both US and Russian sources sheds new light on a period that also has a particularly rich historical record. The case study highlights the uncertainty that arose in the US in response to Gorbachev coming to power. While later it would be clear that the new Soviet leader was in fact pursuing change, it is easy to overlook that the INF came about before any of the new thinking was observed and understood. The new evidence on US steps to lower inspection demands suggests a reinterpretation of the Treaty as a complex bargain rather than a case where the USSR, backed into a corner of declining power, acquiesced to all US demands. The INF case suggests that a similar reexamination of other agreements, such as the ones presented in Chapter 5, may likewise lead to a better understanding of the determinants of arm control. With the INF, and with the other case studies as well, the evidence to support the claim of the theory was always clearly apparent in existing accounts. The complexity of the historical data is not surprising; in each of these cases studies I am telling a somewhat different story than has been traditionally portrayed about the agreements by both political scientists and historians.

Second, in addition to testing the hypotheses, Chapter 3 introduced a new dataset of arms control treaties and their information sharing provisions over time. The dataset collects for the first time all observed cases of treaties which place arms control limits on

the participants. Data on arms control treaties opens the door for new research on this kind of security institution, both from perspectives of institutional design and security studies. For example, future research can now compare cooperation in security institutions directly with conflict behavior. The analysis in chapter 3 already suggests that some of the same factors that are associated with conflict propensity are also associated with security agreements, which raises questions about what further explanatory variables might separate these outcomes. Additionally, it will be useful to compare states' propensity for security cooperation with cooperation other types of international institutions. If some behaviors in the international system are becoming increasingly globalized, including trade or management of the environment, do patterns also affect the security sphere? Opportunities to investigate these kinds of questions have previously been very limited due to poor data on adversarial agreements. While alliances –where we have much better data – are also an important type of cooperation, they are only part of the picture, and my project significantly expands the potential for security institutions.

6.2 Future Research on Effects of Arms Control Treaties

This project started with essentially an assumption that higher monitoring treaties are more desirable because they are more likely to assure compliance and more effective treaties. This assumption is logical, and widely held by policymakers and arms control experts. However, it has not been systematically tested in the data, and it's not entirely clear what makes an adversarial agreement "effective." The findings presented in this project suggest that there is more work to be done on both understanding effectiveness and drawing a causal connection between institutional design features and effective outcomes. Effectiveness of agreements is a separate but complementary issue in understanding why states choose different cooperation

forms. In an edited volume, Acharya and Johnston (2007) look at variation in regional cooperative institutions and ask whether certain agreement features are associated with greater effectiveness in mitigating threats such as armed conflict. However, the results are inconclusive, and the volume's authors refocus on the "nature" of cooperation problems rather than measures of its "quality" or effectiveness.¹ Revisiting the assumption of effectiveness is an important next question for research on adversarial agreements.

As a starting point, it is important to outline some of the implications of my project for questions of effectiveness, and identify the most promising next steps and challenges for research. There are several approaches to agreement effectiveness; we can assess levels of compliance with treaty terms, change in the state of the world based on pre-agreement reference points, change in behavior of actors, or closeness to attaining the agreement goal or a collectively optimal solution to the problem at hand.² From some of these perspectives, a number of significant arms control treaties between the US and USSR were ineffective. Arsenals of both states increased both in number and in capability during the 1970s when the SALT I treaty was in place. The Limited Test Ban Treaty, though characterized by good compliance, did not limit the abilities of the superpower to conduct the weapons development, while states that might have actually been constrained by a prohibition on surface testing were not parties to the treaty.³ And, as noted in Chapter 5, the Lahore Declaration did not prevent India and Pakistan from engaging in another territorial conflict.

My model of treaty design and the findings of case studies suggest that the most promising direction for an effectiveness assessment is the comparison to a counterfactual:

¹Amitav Acharya and Alastair Iain Johnston, *Crafting Cooperation: Regional International Institutions in Comparative Perspective* (Cambridge University Press, 2007), 264.

²Ronald B. Mitchell, "International Environmental Agreements: A Survey of Their Features, Formation, and Effects," *Annual Review of Environment and Resources* 28, no. 1 (Nov. 2003): 429–461.

³Steven E. Miller, "Politics over Promise: Domestic Impediments to Arms Control," *International Security* 8, no. 4 (Spring 1984): 67–90.

what would be the state of competition between the adversaries if the agreement with a certain information feature had not existed? Alternatively, would a different outcome have been likely with an different level of information exchange? The latter question is very difficult to answer, and both are likely to be very difficult in a large-n context. However, future research can make use of parallel cases, where an agreement exists in one scenario and failed to be negotiated in another. For example, intrusive confidence building measures were negotiated in Eastern Europe in the late 1980s to address risks of conflict escalation. On the other hand, attempts to create a similar system in the Middle East, though the Arms Control and Regional Security (ACRS) dialogue have not been successful. The stability of peace in both regions has been tested though a number of crises, with European security most recently in question over Russia's 2014 aggression towards Ukraine. Though clearly not perfect counterfactuals for one another, the variation of outcomes in these two cases can provide evidence on whether the arms control measures have been effective in their intended goal of diminishing the probability of misperception and first strike incentives.

In thinking about effectiveness as a counterfactual it is also important to note that individual arms control treaties are not indented to resolve every element of competition between adversarial states. In fact, most of them clearly accept that the participants remain in competition with one another, and may even use the agreement itself (and its monitoring provisions) to gain a security advantage over the adversary. It is therefore important to assess them on the goals that they do seek to address. Some arms control treaties, such as the recent New START treaty, have been criticized for simply reflecting the existing status quo of state's armaments or planned reductions. A treaty with the arguably modest goal of maintaining status quo can still be ineffective, however, and difficult to maintain when there are strong incentives to reassess prior military planning.

Another important challenge for thinking about effectiveness is determining the period that an adversarial agreement should be in place for it to be considered effective. While

some agreements like the INF treaty have concrete goals for elimination of certain capabilities, others like the Israel-Egypt Peace Treaty intend to establish an ongoing condition of restraint between the adversaries. Therefore, it may be useful to assess some treaties not as effective or ineffective, but rather as varying in the amount of time for which an agreement is upheld without violations that invalidate the agreement. Finally, for some agreements, it may be useful to assess effectiveness based on critical moments when the agreement terms are tested, not on agreement longevity. For example, Hotline agreements call on states to use a dedicated communication system in the event of a crisis. However, while the US-Russian systems are used regularly (both hotline and risk reduction center communications), the hotline between the Pakistani and Indian directors general of military operations (DGMOs) has been used in peacetime but not during times of crisis.

The research so far suggests that high monitoring may indeed be necessary for treaty effectiveness, but the situations where this is the case are also the ones where incentives for violations are still particularly high. So, we should expect that even high monitoring treaties are at times ineffective. On the other hand, if it is the case, as my theory suggests, that low monitoring agreements emerge under conditions which are already relatively cooperative, then it would not be surprising that low monitoring agreements can also be quite effective. In developing future research on agreement effectiveness, it will be important to characterize such differences in baseline expectations of cooperation. This project has shown that underlying expectations of the adversaries incentives have an affect on agreement design choices that are made with expectations of what will be effective.

6.3 Implications for Policy

As already suggested with the Iran case, my theory has several implications for policy, both in terms of recommendations for what kinds of agreement design options should be pursued

in a given situation, but also in identifying how policymakers should access and prepare for future windows of opportunities for adversarial cooperation agreements. All the case studies show that even in situations that are very difficult for cooperation, agreements are possible. US/Russia, India/Pakistan, Egypt/Israel and finally US/Iran are exactly the kinds of situations outlined in the Introduction to this project, where two sides have the option of coming to an agreement rather than pursuing further arms racing or even military conflict, but designing the arms control option presents its own significant challenges. Policymakers are directly wrestling with choices over which kinds of agreement forms to pursue and when, so a better understanding of why some agreements are more likely to be accepted as a two-sided bargain can provide guidance for more concrete decision making.

My research suggests that high monitoring treaties do not always grow out of or build on prior cooperation efforts. The idea of incremental steps is popular among arms control practitioners, and it may indeed apply in some situations. My findings do not reject the idea that repeated low level cooperation between two adversaries can over time increase mutual expectations that the opponent has low incentives for defecting on bargains and does intend to comply with efforts to restrain arms or military behavior. Using agreements to update beliefs and expectation can be a way to make future cooperation more likely.

But, the creation of incremental confidence building and increasingly stable expectations about the adversary is also not the only path towards the kinds of highly intrusive agreements that we expect will be effective for observing compliance, and in fact may be the less promising approach. Treaties with intrusive information provisions can also emerge from conditions of no cooperation at all. I have shown that states with strong beliefs that their adversaries are likely to cheat on cooperation, the Competitive types, are likely to go from no cooperation to high monitoring agreements. When cheating on cooperation is likely, low monitoring agreements neither help states guard against opportunist defection, nor observe what the other side is doing accurately enough to update beliefs about the opponent. In-

stead, incrementalism, through low monitoring agreements or CBMs, might be most useful in cases where both sides already expect cooperation and use the agreement to work out the technical details, lower the transaction costs of their coordination, and provide a cost effective hedge against possible changes in approach by the adversary.

Second, this project also suggests states do not fail to pursue arms control agreements with intrusive information features because they do not know how these information exchanges work, or are lacking in experience for designing and implementing such agreements. Both nongovernmental organizations and official channels have invested time and resources in trying to “teach” arms control practices to other countries, with the goal of seeing these states one day engage in the same kind of agreements that exist between the US and Russia. An implication of my findings is that these efforts might be better seen as bringing other auxiliary diplomacy benefits rather than as stepping stones towards adversarial cooperation agreements. For example, contacts on non-controversial issues, such as presentations on existing arms control efforts, can be a way to develop contacts with a foreign bureaucracy that decrease transaction costs of diplomacy on other issues in the future.

The evidence that states can become socialized to accept certain types of arms control forms is limited. Even if governments are more likely to consider certain options – such as hotlines, consultative commissions, or even inspections – due to prior exposure in other institutional contexts, they are likely to chose from this menu, which also of course includes a “no agreement” option, based on their own security calculus. States can fail to reapplying the lessons of external security institutions, perhaps intentionally so, while at the same time there is ample evidence – such as in the INF case– of treaty negotiators developing new measures for specific information challenges that have not been tried previously. The INF case also shows that changes in ideas about arms control, particularly new assessments on the benefits of information provisions, can have a strong effect on a state’s willingness to pursue intrusive measures. However, for the USSR, the new thinking on information came

from internal reassessments of what was costly or not costly to reveal through inspections rather than an adoption or even a recognition of internationally accepted standards.

Given the choices in agreement design, when should policymakers pursue low monitoring options, high monitoring, or rather no agreement at all? The key moments for low monitoring agreements appear to be when parties see an advantage to formalize a sense of cooperation which they already see as occurring. The formality of the agreement, along with low cost information features, can help states detect changes in cooperative approaches, but ultimately these changes are not expected to occur. Domestic volatility can prompt a need for this low level hedge, and create a window of opportunity to pursue an agreement. However, for these kinds of mutually cooperative issues, the impulse should not be try to include more monitoring and information exchange while a negotiating opportunity exists. These are likely to be seen as too costly and unnecessary, and pushing for more could scuttle an acceptable low monitoring deal.

One example looking forward might be a convention on space. Currently, the main space capable states have generally aligned cooperation incentives to avoid dangerous activities, high levels debris, and even weaponization. Changes in leadership in the US or Russia (or possibly China) could suggest a reevaluation of space policy. A low monitoring convention at that time could be a low cost hedge to maintain cooperation. However, policymakers should perhaps not be surprised that so far a space convention has been slow coming. Without some new uncertainty to motivate the need for an agreement, the status quo of ongoing discussions and informal alignment is the less costly option.

High monitoring agreements are more likely to emerge out of highly contested areas where cheating is believed to be likely. During moments of stability, cooperation in these areas is often too difficult. Policymakers should not be surprised to see agreement proposals from adversaries that are extreme in their demands, because they are made with the expectation of being rejected. Such efforts are perhaps less a sign of any new intransigence,

but rather as a preference for the status quo. However, conditions of social unrest or new leadership turnover open up critical opportunities where an agreement is possible. Following an increase in uncertainty, both sides may be more willing to risk cooperation in ways they previously rejected.

The current US-Russia relationship is a good case in point. Years into the Obama administration and a second turn of Putin in office, both sides are almost completely at odds on numerous security cooperation issues. Both sides are discussing options for modernizing nuclear arsenals, and both see the other as having asymmetric advantages (drones on the US side, and conventional forces in Eastern Europe on the Russian.) The stalemate on missile defense is reminiscent of the late 1980s. Russia has proposed to multilateralize the next round of nuclear arms reduction, likely knowing that these ideas will not gain traction. So in many ways, policymakers should not be surprised that new rounds of arms control with Russia have not developed, and this would not be the time to spend political resources to pursue them. Rather, both the US and Russia should be ready for a new opportunity for meaningful proposal following the next election in either state. From the US perspective, another upsurge in social unrest in Russia (which was surprisingly large in Fall/Winter 2012) may also be an indicator that President Putin has stronger incentives to seek international security cooperation.

Essentially, my theory argues that moments of political volatility are windows of opportunity for adversarial cooperation. Policy recommendations often call on decision makers to spend more time on a particular issue area, noting the importance of political will and high level attention for making new policy happen. The reality, however, is that attention, time, and resources are limited. The theory and findings presented in this project suggest that policymakers should focus their efforts. While not every leadership change or instance of social unrest will lead to a security agreement, these are the moments which deserve extra attention from policymakers to assess whether an opportunity is emerging.

6.4 Arms Control Without Arms

Finally, this project suggests new questions for both policy and academic research on international security institutions designed in response to a growing number of transnational threats. Such threats include piracy, trafficking, terrorism, and cyber security – all situations where the source of the security problem could be a state adversary, a non-state group, or some combination of both. There is a growing category of security cooperation challenges where “arms control” will not be about limiting armaments or military capabilities, but rather about limiting access, reducing opportunities for deception, and mitigating the threats of illicit or disruptive activities.

The cooperation challenges I identify in the arms control context are a key element when we move outside the state based context, and in these areas as well the exchange of information faces a trade-off between improving cooperation and making it more costly. Information exchange provisions make programs such as globalized counterterrorism efforts more likely to be effective, but revealing information is always costly, even with a collective benefit. States may fear being held accountable for non-state actors they cannot control, or those agents they try to control illicitly. Cooperation, while being essential in responding to a transnational threat, could likewise be used as pretext for intervention and coercion, implying that choices over its form and extent have direct consequences on state-based security outcomes.

Cyber security is perhaps the most important area of theory development and research on adversarial cooperation. The very nature of these emerging threats presents new challenges for how we think about cooperation in both theory and practice. Cyber technologies blur the line between state and non-state actors, but responding to these threats is central on the agenda of governments. While five years ago much of the policy conversation was about non-state actors and the private sector, today it is once again about the

state. States are forming offensive and defensive cyber policies, and they are starting to experiment with forms of formal cooperation to manage cyber threats which are ambiguous in their state or non-state sources. Some experts have proposed international agreements on cyber security—in a sense “cyber arms control.”⁴ The US has started to explore “confidence building measures” for cyber security as another avenue for cooperation, which would be less binding or intrusive but likely more feasible than formal arms limitation treaties. For example, the US and Russia have signed an agreement to exchange notifications of cyber threats using the Nuclear Risk Reduction Center, a tool of several nuclear and conventional treaty regimes.

As we begin to think about cooperation on cyber security, what conditions may lead states to seek formal cooperation tools? What form might such an agreement be likely to take? Lessons from traditional arms control may have some new applications, in part because the fundamental concerns over relative advantage, sharing information, and revealing intentions continue to play a key role. Research on the design of existing security agreements can provide a basis for addressing these questions, and lead to a better understanding of factors which drive forms of cooperation in new areas.

⁴One notable example is, “Cyberwar: It is time for countries to start talking about arms control on the internet,” *The Economist*, July 2010.

Appendices

Appendix A

Appendix for Chapter 2 – Formal Theory

A.1 Appendix for Chapter 2: Formal Theory Proofs

This Appendix provides the full calculations for the treaty bargaining and implementation game summarized in Chapter 2. For ease of readability, some sections of Chapter 2 are repeated here accompanied by more detail, other calculations and proofs.¹

Incomplete Information: Player Types

At the start of the game, Nature randomly chooses the *type* of each of the players. The type of the player determines the player's temptation payoff in the Implementation Game, and each player can either be a Competitive or Cooperative type. Let $\Theta_i = \{H, L\}$ be the set of types of player i , where H **refers to the Competitive type**, and L **refers to the Cooperative type**.

¹This appendix is co-authored with Igor Vaynman, Department of Economics, University of California San Diego.

Let $(\theta_1, \theta_2) \in \Theta_1 \times \Theta_2$ be the types of players chosen by Nature. We assume that Nature chooses θ_1 and θ_2 independently. Players observe their own types, but not the types of the other player. Let $\alpha = P(\theta_i = H)$, assume that α is common knowledge. A player's type is therefore a private initial signal.²

Stage Game

The Implementation Game has two periods. Each period consists of the following stage game. The stage game is a simultaneous move game with the following structure:

		Player $-i$	
		C	D
Player i	C	r, r	$-l, \tau_j$
	D	$\tau_i, -l$	$-c, -c$

In this stage game, C stands for Cooperate and D stands for Defect. The payoffs for the (C, D) and (D, C) outcomes depend on the types of the players, with temptation payoff $\tau_i = t$ if $\theta_i = H$ and $\tau_i = g$ otherwise. Assume that $t > r > g > -c > -l$ to ensure that these are in fact prisoner's dilemma and coordination stage games. Assume also that $2r > t - l$ so that repeated mutual cooperation is the efficient outcome.

Formally, let $A_i = A_{-i} = \{C, D\}$ be the set of pure actions available for each player in the stage game, and $A = A_i \times A_{-i} = \{C, D\} \times \{C, D\}$ be the space of pure action profiles. Let $a = (a_i, a_{-i}) \in A$ denote a generic action profile. The payoffs in the stage game are given by $u_i : A \times \Theta_i \rightarrow \mathbb{R}$, so that $u_i(a_i, a_{-i}, \theta_i)$ is the stage game payoff for player i with type θ_i ,

²The private signal differentiate this game from a standard public monitoring context, even though the rest of the signals are public.

under action profile (a_i, a_{-i}) .

The following lemma analyzes the best response structure in the stage game.

Lemma 1. *If $\theta_i = H$, then the best response to any a_{-i} is $a_i = D$. If $\theta_i = L$, and $a_{-i} = (1 - \xi)C + \xi D$, $i \in [0, 1]$, then $a_i = C$ is a best response if $\xi \leq \mu^*$, and $a_i = D$ is a best response if $\xi \geq \mu^*$, where*

$$\mu^* = \frac{r - g}{r - g + l - c} \quad (\text{A.1})$$

If $\xi = \mu^$, then $a_i = (1 - q)C + qD$ is a best response for any $q \in [0, 1]$.*

Proof. It is clear that $a_i = L$ is strictly dominated by $a_i = D$ when $\theta_i = H$. For $\theta_i = L$, $a_i = C$ is a best response if

$$\begin{aligned} E[u_i(C, a_{-i}, L)] &\geq E[u_i(D, a_{-i}, L)] \\ -\xi l + (1 - \xi)r &\geq -\xi c + (1 - \xi)g \\ \frac{r - g}{r - g + l - c} &\geq \xi \end{aligned} \quad (\text{A.2})$$

Similarly $a_i = D$ will be a best response if $\xi \geq \mu^*$, and indifference will occur if $\xi = \mu^*$.

□

The Two-Period Game

Players begin by observing their private types, θ_i . Players then play the stage game in period 1, observe a public signal s but not the opponent's action, and then play the stage game again in period 2.

Monitoring Structure

The action in the first period stage game is not observed. A public signal $s \in \{\bar{s}, \underline{s}\}$ is generated and observed by both players. Signals are generated by the distribution,

$$P(\bar{s}|a) = \begin{cases} 1, & \text{if } a = CC \\ 1 - p, & \text{if } a \in \{CD, DC, DD\} \end{cases} \quad (\text{A.3})$$

$$P(\underline{s}|a) = \begin{cases} 0, & \text{if } a = CC \\ p, & \text{if } a \in \{CD, DC, DD\} \end{cases} \quad (\text{A.4})$$

This monitoring structure implies there are no false positives of defection: $P(CC|\underline{s}) = 0$. If the signal \underline{s} is observed, it is known with certainty that at least one player defected. We therefore label \underline{s} as a “defect signal”. The \bar{s} signal however does not imply Defect was not played. Note further that in this monitoring structure, the probability of observing a defection signal \underline{s} is the same if one player defects and if both players defect.

Information sets

At the start of the first period, the history of each player includes only nature’s choice, so there are two possible histories at the first node. Let \mathcal{H}_i^t denote the set of histories player i , at the start of period $t \in \{1, 2\}$.

$$\mathcal{H}_i^1 = \Theta_i, \quad \mathcal{H}_i^2 \equiv \Theta_i \times A_i \times \{\bar{s}, \underline{s}\} \quad (\text{A.5})$$

Let $\mathcal{H}_i = \mathcal{H}_i^1 \cup \mathcal{H}_i^2$ the represent the 10 information sets for player i . Each information set in \mathcal{H}_i^1 contain 2 nodes, $\{H, L\}$, and each information set in \mathcal{H}_i^2 contains 4 nodes, $\{H, L\} \times \{C, D\}$.

Strategies

A *pure strategy* for player i is a mapping $\sigma_i : \mathcal{H}_i \rightarrow \{C, D\}$, and a *behavior strategy* is the mapping $\sigma_i : \mathcal{H}_i \rightarrow \Delta\{C, D\}$, where $\Delta\{C, D\}$ is the set of probability distributions over $\{C, D\}$. Since \mathcal{H}_i consists of ten information sets, a pure strategy σ_i is a 10-tuple specifying whether to play C or D at each information set. To simplify notation, for all strategies considered we will assume that $\sigma_i(H, a_i, s) = D$ for each $a_i \in \{C, D\}$, and $s \in \{\bar{s}, \underline{s}\}$. As well be proven below, any sequentially rational strategy profile requires Competitive types to defect at every information set in the second period. Therefore for brevity we will suppress the dependence on these four information sets and fix $\sigma_i(H, a_i, s) = D$.

We consider action free strategies, where $\sigma_i(\theta_i, C, s) = \sigma_i(\theta_i, D, s)$, $\forall \theta_i \in \{H, L\}, s \in \{\bar{s}, \underline{s}\}$. A player playing an action free strategy only cares about his own type and the public signal, not his action in period 1. In other words, we assume that the action the player took in the first period does not affect their calculation in the second period. Therefore the action taken at information sets (L, C, s) and (L, D, s) is the same, for each s . Hence we will refer to these two information sets as just (L, s) .

As player $-i$ chooses the same action at pairs of information sets (θ_{-i}, C, s) and (θ_{-i}, D, s) , it is sufficient to restrict attention to belief systems that place equal probability on pairs of nodes $(\theta_i, \theta_{-i}, a_i, a_{-i} = C, s)$ and $(\theta_i, \theta_{-i}, a_i, a_{-i} = D, s)$ in player i 's information set (θ_i, a_i, s) .

We see that a strategy needs to specify actions at the following information sets $\{H, L, (L, \bar{s}), (L, \underline{s})\}$, meaning a strategy can be represented as a 4-tuple:

$$\sigma_i = \begin{pmatrix} H \text{ type action in period 1,} \\ L \text{ type action in period 1,} \\ L \text{ type action in period 2 after observing } \bar{s} \text{ signal,} \\ L \text{ type action in period 2 after observing } \underline{s} \text{ signal} \end{pmatrix} \quad (\text{A.6})$$

For example, the strategy (D, C, C, D) means that the Competitive type plays D in period 1, the Cooperative type plays C in period 1, and then the Cooperative type plays C in period 2 after observing a \bar{s} signal, and plays D in period 2 after observing a \underline{s} signal. Of course, the Competitive type plays D in period 2 regardless of the signal.

When referring to the action in the second period, we will just write $\sigma_i^L(s)$ to refer to the action of player i , Cooperative type, in period 2, following signal s . It is understood that $\sigma_i^H(s) = D$.

Payoffs

The payoff to each player from the two period game is the sum of the payoffs from the stage game in each of the periods. We denote the full two period for player i as $U_i^{\theta_i}(\sigma_i, \sigma_{-i})$.

Sequential Rationality in Period 2

Lemma 2. *For any belief system, a strategy profile is sequentially rational only if $\sigma_i(H, a_i, s) = D$, for $i \in \{1, 2\}$, and $s \in \{\bar{s}, \underline{s}\}$ and $a_i \in \{C, D\}$.*

Proof. This result is trivial since D strictly dominates C for the Competitive types in the final period. □

For the Cooperative type, the sequentially rational strategy after observing signal s will depend on the belief $\mu = \mu_i(L, s)$ and the strategy of the other player, σ_{-i} , specifically $\sigma_{-i}^L(s)$, the second stage action of the Low type opponent after observing signal s . There are three cases for $\sigma_i^L(s)$, 1) the first where both Types play D after observing signal s , 2) second, the Cooperative Type plays C after observing signal s , and finally 3) The cooperative type mixes over C and D after observing signal s . Remember that as noted above, for the Competitive Type, only D is sequentially rational in the second period.

Fix an information set $h = (\theta_i = L, a_i, s) \in \mathcal{H}_i^2$, and consider a belief system such that places probability μ on node $(\theta_i = L, \theta_{-i} = H, s)$ in the information set, and probability $1 - \mu$ on node $(\theta_i = L, \theta_{-i} = L, s)$. We interpret μ as the probability that Player $-i$ is the Competitive type, after observing signal s . The following lemma gives conditions under which a strategy profile is sequentially rational at h .

Lemma 3. *Given a belief system that assigns probability μ to node $(\theta_i = L, \theta_{-i} = H, s)$, and a general strategy for player $-i$ specifying $\sigma_{-i}^L(s) = qC + (1 - q)D$, then a strategy $\sigma_i^L(s)$ for player i is sequentially rational if*

1. $\sigma_i^L(s) = D$ and $1 - q(1 - \mu) > \mu^*$.

2. $\sigma_i^L(s) = C$ and $1 - q(1 - \mu) < \mu^*$

Proof. Given σ_{-i} and the belief system, then in the second period, $P(a_{-i} = D) = 1 - q(1 - \mu)$.

The result then follows by Lemma 1 with $\xi = 1 - q(1 - \mu)$.

Note that $q=0$ or 1 when looking only at pure strategies.

□

The μ^* cutoff: It is useful to consider in greater detail the cutoff $\mu^* = (r - g)/(r - g + l - c)$. Since playing C can only be sequentially rational when $\mu \leq \mu^*$, then values of μ^* closer to zero create a more strict condition. That $\mu^* > 0$ is clear since $r > g$. But we see that μ^* decreases as $r - g$ decreases or as $l - c$ increases. The difference $r - g$ represents the additional benefit to the Cooperative type from coordinating on (C, C) . This difference captures the benefit of symbiotic cooperation (C, C) is over comparative advantage, (C, D) . So as the benefit from symbiotic cooperation relative to comparative advantage increases, the benefit of the possible cooperation with an opponent Cooperative type increases, and hence the Cooperative type is less worried about the prospect that the opponent is actually the Competitive type. In other words, when the benefits of cooperation are higher, then the player is still willing to cooperate even while having a higher belief that the opponent is a Competitive type.

The difference $l - c$ measures the costs of being taken advantage of versus the status quo. As this cost increases, the Cooperative type needs to be more sure that he is not playing an opponent Competitive type that will take advantage of him, and so μ^* decreases. This implies that when costs of being suckered are high, then the Cooperative Type will need to be fairly sure he is playing another Cooperative type. However, when the costs of being taken advantage of are low, then the Cooperative type will be willing to cooperate even if he believes there is a higher chance that the opponent is a Competitive type. Both these relationships –on the relative benefits of cooperation and the relative costs of being taken advantage of– should sound fairly intuitive from the substantive perspective of arms control treaties.

Updating

We next need to verify that the belief system which supports each possible strategy is consistent with Bayes rule, when appropriate. These beliefs will come from either updating based on α and the observed signal in period 1, or if updating was not available then from a baseline assumption. In the lemma and table below, we consider the scenarios for what strategies are played in the first period (Player 1 Cooperative type (L), Player 2 Cooperative (L) or Competitive (H)). Note that we do not need to check the Player 1 Competitive scenario because a Competitive type's second period strategy does not depend on beliefs, and is always D. For each strategy combination, we identify what the updated belief would be about the probability of Player 2 being a Competitive Type (H) conditional on observing a cooperate signal \bar{s} and given a defect signal \underline{s} .

For a belief system, let $\mu_i^H(s)$ be the probability assigned to node $(\theta_i, \theta_{-i} = H, a_i, a_{-i}, s)$. The following lemma describes what the belief system must satisfy in order to be consistent with Bayes' rule.

Lemma 4. *To be consistent with Bayes rule, the belief system must satisfy the following:*

Period 1 Strategy				Updated Belief	
	σ_i^L	σ_{-i}^L	σ_{-i}^H	$P(\theta_{-i} = H \bar{s})$	$P(\theta_{-i} = H \underline{s})$
Case 1	C	C	C	α	Unspecified
Case 2	C	C	D	$\frac{(1-p)\alpha}{1-p\alpha}$	1
Case 3	C	D	C	$\frac{\alpha}{1-p(1-\alpha)}$	0
Case 4	D	C/D	C/D	α	α

Proof. For all the cases, consider the strategy for player $-i$ that specifies in period 1,

$$\sigma_{-i}^L = \xi_L C + (1 - \xi_L)D, \quad \sigma_{-i}^H = \xi_H C + (1 - \xi_H)D$$

and the strategy for player i that specifies in period 1

$$\sigma_i^L = qC + (1 - q)D$$

Based on the monitoring structure,

$$P(\bar{s}|\theta_{-i} = H, \sigma_i^L, \sigma_{-i}) = q\xi_H + (1 - p)(1 - q\xi_H)$$

$$P(\bar{s}|\theta_{-i} = L, \sigma_i^L, \sigma_{-i}) = q\xi_L + (1 - p)(1 - q\xi_L)$$

$$P(\underline{s}|\theta_{-i} = H, \sigma_i^L, \sigma_{-i}) = p(1 - q\xi_H)$$

$$P(\underline{s}|\theta_{-i} = L, \sigma_i^L, \sigma_{-i}) = p(1 - q\xi_L)$$

By Bayes rule

$$\begin{aligned} P(\theta_{-i} = H|\bar{s}, \sigma_i^L, \sigma_{-i}) &= \frac{P(\bar{s}|\theta_{-i} = H, \sigma_i^L, \sigma_{-i})P(\theta_{-i} = H)}{P(\bar{s}|\theta_{-i} = H, \sigma_i^L, \sigma_{-i})P(\theta_{-i} = H) + P(\bar{s}|\theta_{-i} = L, \sigma_i^L, \sigma_{-i})P(\theta_{-i} = L)} \\ &= \frac{(q\xi_H + (1 - p)(1 - q\xi_H))\alpha}{(q\xi_H + (1 - p)(1 - q\xi_H))\alpha + (q\xi_L + (1 - p)(1 - q\xi_L))(1 - \alpha)} \end{aligned}$$

And similarly for the defect signal:

$$\begin{aligned} P(\theta_{-i} = H|\underline{s}, \sigma_i^L, \sigma_{-i}) &= \frac{P(\underline{s}|\theta_{-i} = H, \sigma_i^L, \sigma_{-i})P(\theta_{-i} = H)}{P(\underline{s}|\theta_{-i} = H, \sigma_i^L, \sigma_{-i})P(\theta_{-i} = H) + P(\underline{s}|\theta_{-i} = L, \sigma_i^L, \sigma_{-i})P(\theta_{-i} = L)} \\ &= \frac{p(1 - q\xi_H)\alpha}{p(1 - q\xi_H)\alpha + p(1 - q\xi_L)(1 - \alpha)} \end{aligned}$$

Plugging in the appropriate values for (q, ξ_L, ξ_H) yields the results shown in the table. We walk through the logic of each case in turn.

Case 1: Suppose both L and H types opponents play C in period 1. If a cooperate signal is observed, \bar{s} then beliefs are not updated and θ_i 's belief that the opponent is a H type is still α . If a defect signal is observed, \underline{s} , the situation is not pinned down by Bayes rule, so we assume Player θ_i 's beliefs are a baseline worst case scenario, so Player θ_{-i} is assumed to be a H type.

Case 2: Suppose L type opponents plays C and H type opponent plays D in period 1. If Player θ_i plays C and sees a defection signal \underline{s} , then he knows that player θ_{-i} must be the H type (as there are no false positives in the monitoring structure) and the beliefs are updated to $\mu = 1$. However, if θ_i plays C and observes a cooperate signal the beliefs are updated using Bayes rule:

$$\begin{aligned} P(\theta_{-i} = H | \bar{s}, \sigma_i^L, \sigma_{-i}) &= \frac{(1-p)\alpha}{(1-p)\alpha + 1 * (1-\alpha)} \\ &= \frac{(1-p)\alpha}{(1-p\alpha)} \end{aligned}$$

Case 3: Suppose L type opponents play D in the first period, and H types play C (reversing Case 2). If a defect signal \underline{s} is observed, the probability that player 2 is a L type is updated to 1, and the probability that Player 2 is a H type is updated to 0. If a cooperate signal \bar{s} is observed, beliefs are updated according to Bayes rule:

$$P(\theta_{-i} = H | \bar{s}, \sigma_i^L, \sigma_{-i}) = \frac{\alpha}{1 - p(1 + \alpha)}$$

Case 4: Suppose Payer θ_i play D in the first period. Regardless of the strategy of the opponent, and if a defection signal \underline{s} or a cooperation signal \bar{s} is observed, the beliefs do not update and the belief that the opponent is a H type is still α . In this case, $q = 0$, which we can plug into Bayes Rule:

$$\begin{aligned} P(\theta_{-i} = H | \bar{s}, \sigma_i^L, \sigma_{-i}) &= \frac{(1 - p)(\alpha)}{(1 - p)\alpha + (1 - p)(1 - \alpha)} \\ &= \alpha \end{aligned}$$

And similarly for the defect signal:

$$\begin{aligned} P(\theta_{-i} &= \frac{p(1 - q\xi_H)\alpha}{p(1 - q\xi_H)\alpha + p(1 - q\xi_L)(1 - \alpha)} \\ &= \frac{p\alpha}{p\alpha + p - p\alpha} \\ &= \alpha \end{aligned}$$

□

Defining an Equilibrium

A profile of strategies is a Perfect Bayesian Nash Equilibrium when (i) players are sequentially rational given a system of beliefs and (ii) beliefs are updated correctly via Bayes rule when possible.

We focus first on informative strategies, where states update their beliefs based on the signal they observe.

Strategy 1: H types play D in both periods, no matter what signal they see. L types play C in period 1, then play C in period 2 if they see a cooperate signal \bar{s} , and play D if they see a defect \underline{s} signal.

Strategy 2: H types play C in period 1 and then D in period 2. L types play C in period 1, then play C in period 2 if they see a cooperate signal \bar{s} , and play D if they see a defect \underline{s} signal.

Recall from Equation 6 that the notation for a strategy is as defined as a 4-tuple where $\sigma_i = (H \text{ action in period 1}, L \text{ action in period 1}, L \text{ action in period 2 after observing } \bar{s} \text{ signal}, L \text{ action in period 2 after observing } \underline{s} \text{ signal})$.

Theorem 5 (Strategy 1). *The symmetric strategy profile $\sigma_i = (D, C, C, D)$ is a PBE under the belief system $\mu_i^{L,H}(\emptyset) = \alpha$, $\mu_i^L(\bar{s}) = (1-p)\alpha/(1-p\alpha)$, $\mu_i^L(\underline{s}) = 1$, and $\mu_i^H(\bar{s}) = \mu_i^H(\underline{s}) = \alpha$ if, the monitoring level p and initial belief α satisfy,*

$$\left(\frac{\alpha}{1-\alpha}\right)\left(\frac{l-c}{t+c}\right) + \left(\frac{t-r}{t+c}\right) \geq p \geq \max\left\{\frac{\alpha-\mu^*}{\alpha-\alpha\mu^*}, \left(\frac{\alpha}{1-\alpha}\right)\left(\frac{l-c}{r+c}\right) - \left(\frac{r-g}{r+c}\right)\right\} \quad (\text{A.7})$$

Proof. That beliefs are consistent with Bayes Rule when possible is verified by Lemma 4. We first verify sequential rationality in the second period. Lemma 2 trivially assures sequential rationality at information sets $(\theta_i = H, a_i, s)$. Now consider information sets $(\theta_i = L, a_i, s)$. Sequential rationality after observing signal \bar{s} occurs if, by Lemma 3 with $\mu = (1 - p)\alpha/(1 - p\alpha)$ and $q = 1$,

$$(1 - p)\alpha/(1 - p\alpha) \leq \mu^* \implies p \geq \frac{\alpha - \mu^*}{\alpha - \alpha\mu^*} \quad (\text{A.8})$$

The strategy profile is sequentially rational after observing signal \underline{s} again by Lemma 3 with $\mu = 1$, $q = 0$. The term $p^* = (\alpha - \mu^*)/(\alpha - \alpha\mu^*)$ therefore represents the minimum monitoring necessary for this strategy profile to be sequentially rational. As expected, if $\alpha \leq \mu^*$, then $p = 0$ satisfies the condition: the L type player is already sufficiently sure that the other player is not the H type that he is willing to play C in period 2 even without updating. On the other hand, if $1 > \alpha > \mu^*$, then $p^* \in (0, 1)$, and so a necessary condition for this strategy profile to be sequentially rational is $p \in [p^*, 1]$. This essentially means that when Player 1 is very sure that Player 2 not a Competitive type, updating from the first period only makes him more sure of that belief, so zero monitoring is enough. However, when Player 1's belief is not below this threshold, then there is a minimum level of monitoring at which this strategy is sequentially rational.

Next we verify sequential rationality in stage one. Begin with $\theta_i = L$, and compute the full game payoff from Player i from C in the first period and compare with the full game payoff of Player i from playing D in the first period.

- *Full payoff from playing C in the first period:* With probability $1 - \alpha$, Player i is playing an opponent who is also Cooperative type, so both will play C in period 1, a cooperation signal will be generated, then both will play C in the 2nd period, for a total payoff of $2r$.

With probability α Player i is playing an opponent who is a Competitive type. Player i will get $-l$ in the first period. Then with probability p the Competitive type's defection is caught and a defect signal \underline{s} is observed, and then both Players defect in period 2 for a payoff of $-c$. With probability $1 - p$ the defection is not caught and a good signal \bar{s} is observed and so Player i plays C in period 2 and will get $-l$ again. The full game payoff against a Competitive type is: $-l + p(-c) + (1 - p)(-l)$ Putting this together, playing laying C in period 1 gives payoff:

$$\begin{aligned} E[U_i^L(\sigma_i, \sigma_{-i})] &= (1 - \alpha)2r + \alpha(-l + p(-c) + (1 - p)(-l)) \\ &= (1 - \alpha)2r - 2\alpha l + p\alpha(l - c) \end{aligned} \tag{A.9}$$

- *Full payoff from playing D in the first period:* With a probability of $1 - \alpha$, Player i is playing an opponent who is a Cooperative type, yielding payoff g in stage 1. With probability p a defect signal is generated, and both players play D in the second period, giving a payoff of $-c$. With a probability $1 - p$ the signal \bar{s} is generated and both players cooperate in the second period for a payoff of r .

With probability α , Player 1 is playing an opponent who is a Competitive type, and with both playing D in the first period, both get a $-c$ payoff. With probability p a defect signal is generated, and Player 1 also defects in the second period, getting a payoff of $-c$. With probability $1 - p$ a signal \bar{s} is observed and Player 1 plays C in the second period, getting $-l$.

Putting this together, playing D in period 1 gives payoff:

$$\begin{aligned}
 E[U_i^L((D, D, C, D), \sigma_{-i})] &= \alpha(-c + p(-c) + (1-p)(-l)) + (1-\alpha)(g + p(-c) + (1-p)(r)) \\
 &= \alpha(-c - l) + (1-\alpha)(g + r) + p(\alpha l - \alpha c - (1-\alpha)(c + r)) \\
 &= \alpha(-c - l) + (1-\alpha)(g + r) + p(\alpha(l + r) - c - r)
 \end{aligned} \tag{A.10}$$

Sequentially rationality at $\theta_{-i} = L$ is satisfied if,

$$\begin{aligned}
 E[U_i^L(\sigma_i, \sigma_{-i})] &\geq E[U_i^L((D, D, C, D), \sigma_{-i})] \\
 (1-\alpha)2r - 2\alpha l + p\alpha(l - c) &\geq \alpha(-c - l) + (1-\alpha)(g + r) + p(\alpha(l + r) - c - r) \\
 p[r + c - \alpha(l + r) + \alpha(l - c)] &\geq \alpha(l - c) + (1-\alpha)(g - r) \\
 p(1-\alpha)(r + c) &\geq \alpha(l - c) + (1-\alpha)(g - r) \\
 p &\geq \left(\frac{\alpha}{1-\alpha}\right) \left(\frac{l - c}{r + c}\right) - \left(\frac{r - g}{r + c}\right)
 \end{aligned} \tag{A.11}$$

Define the minimum level of monitoring,

$$p^\dagger = \left(\frac{\alpha}{1-\alpha}\right) \left(\frac{l - c}{r + c}\right) - \left(\frac{r - g}{r + c}\right) \tag{A.12}$$

Finally, we check that playing D in the first period is the best strategy for the $\theta_i = H$.

Playing D in period 1 gives payoff:

$$\begin{aligned}
 E[U_i^H(\sigma_i, \sigma_{-i})] &= \alpha(-2c) + (1-\alpha)(t + p(-c) + (1-p)t) \\
 &= 2t - 2\alpha(t + c) + p(1-\alpha)(-c - t)
 \end{aligned} \tag{A.13}$$

Playing C in period 1 gives payoff:

$$\begin{aligned} E[U_i^H((C, C, C, D), \sigma_{-i})] &= \alpha(-l - c) + (1 - \alpha)(r + t) \\ &= r + t - \alpha(l + c + r + t) \end{aligned} \tag{A.14}$$

And therefore playing D is sequentially rational if,

$$\begin{aligned} E[U_i^H(\sigma_i, \sigma_{-i})] &\geq E[U_i^H((C, C, C, D), \sigma_{-i})] \\ 2t - 2\alpha(t + c) + p(1 - \alpha)(-c - t) &\geq r + t - \alpha(l + c + r + t) \\ t - r + \alpha(l + c + r + t - 2t - 2c) &\geq p(1 - \alpha)(c + t) \\ \frac{(1 - \alpha)(t - r) + \alpha(l - c)}{(1 - \alpha)(c + t)} &\geq p \\ \left(\frac{t - r}{t + c}\right) + \left(\frac{\alpha}{1 - \alpha}\right) \left(\frac{l - c}{t + c}\right) &\geq p \end{aligned} \tag{A.15}$$

□

The next lemma provides a condition that determines which lower bound, p^\dagger or p^* , is binding for the strategy to be a PBE.

Lemma 6.

$$p^\dagger > p^* \text{ iff } \alpha > \frac{r + c}{r + l}$$

Proof. Recall that,

$$\mu^* = \frac{r - g}{r - g + l - c} \Rightarrow \frac{l - c}{r - g} = \frac{1 - \mu^*}{\mu^*} \tag{A.16}$$

Rearranging the expression for p^\dagger ,

$$\begin{aligned} p^\dagger &= \left(\frac{\alpha}{1 - \alpha}\right) \left(\frac{1 - \mu^*}{\mu^*}\right) \left(\frac{r - g}{r + c}\right) - \left(\frac{r - g}{r + c}\right) = \left(\frac{r - g}{r + c}\right) \left[\left(\frac{\alpha}{1 - \alpha}\right) \left(\frac{1 - \mu^*}{\mu^*}\right) - 1\right] \end{aligned} \tag{A.17}$$

Noting that

$$\begin{aligned}
 \left(\frac{\alpha}{1-\alpha}\right) \left(\frac{1-\mu^*}{\mu^*}\right) - 1 &= \frac{\alpha - \mu^*}{\mu^* - \mu^* \alpha} \\
 &= \left(\frac{\alpha - \mu^*}{\alpha - \alpha \mu^*}\right) \left(\frac{\alpha - \alpha \mu^*}{\mu^* - \mu^* \alpha}\right) \\
 &= p^* \left(\frac{\alpha}{1-\alpha}\right) \left(\frac{1-\mu^*}{\mu^*}\right)
 \end{aligned} \tag{A.18}$$

So we can write,

$$p^\dagger = p^* \left(\frac{r-g}{r+c}\right) \left(\frac{\alpha}{1-\alpha}\right) \left(\frac{1-\mu^*}{\mu^*}\right) \tag{A.19}$$

Plugging in $\frac{1-\mu^*}{\mu^*} = \frac{l-c}{r-g}$ yields,

$$p^\dagger = p^* \left(\frac{l-c}{r+c}\right) \left(\frac{\alpha}{1-\alpha}\right) \tag{A.20}$$

Hence we get that, $p^\dagger > p^*$ if,

$$\left(\frac{l-c}{r+c}\right) \left(\frac{\alpha}{1-\alpha}\right) > 1 \quad \Rightarrow \quad \alpha > \frac{r+c}{r+l} \tag{A.21}$$

□

Theorem 7 (Strategy 2). *The symmetric strategy profile $\sigma_i = (C, C, C, D)$ is a PBE under the belief system $\mu_i^{L,H}(\emptyset) = \alpha$, $\mu_i^{L,H}(\bar{s}) = \alpha$, $\mu_i^{L,H}(\underline{s}) = 1$ if the monitoring level p and initial belief α satisfy,*

$$\alpha \leq \min \left\{ \frac{r+c}{t+c}, \mu^* \right\}, \quad \text{and} \quad p \geq \frac{t-r}{(1-\alpha)(t+c)} \tag{A.22}$$

Proof. Begin by verifying that beliefs are consistent with Bayes rule when possible. By Lemma 4, after observing signal \bar{s} there is no updating possible as types pool and hence beliefs do not change. There are no false positives in the monitoring structure, and since on

the equilibrium path the \underline{s} signal is not observed, we are free to set beliefs $\mu_i^{L,H}(\underline{s}) = 1$ so that D is sequentially rational in period 2 after a \underline{s} signal.

As before, sequential rationality in period 2 is verified by Lemmas 2 and 3, specifically in case of signal \bar{s} , with $q = 1$, and $\mu = \alpha$, yielding the condition $\alpha \leq \mu^*$.

Next we verify sequential rationality in period 1. Consider $\theta_i = H$. Playing C in period 1 gives payoff:

$$E[U_i^H(\sigma_i, \sigma_{-i})] = \alpha(r - c) + (1 - \alpha)(r + t) \quad (\text{A.23})$$

Playing D in period 1 gives payoff:

$$\begin{aligned} E[U_i^H((D, C, C, D), \sigma_{-i})] &= \alpha(t - c) + (1 - \alpha)(t - pc + (1 - p)t) \\ &= \alpha(t - c) + 2(1 - \alpha)t - p(1 - \alpha)(c + t) \end{aligned} \quad (\text{A.24})$$

And therefore playing C is sequentially rational if,

$$\begin{aligned} E[U_i^H(\sigma_i, \sigma_{-i})] &\geq E[U_i^H((D, C, C, D), \sigma_{-i})] \\ \alpha(r - c) + (1 - \alpha)(r + t) &\geq \alpha(t - c) + 2(1 - \alpha)t - p(1 - \alpha)(c + t) \\ p &\geq \frac{t - r}{(1 - \alpha)(t + c)} \end{aligned} \quad (\text{A.25})$$

A $p \in [0, 1]$ exists satisfying this relation if,

$$\frac{t - r}{(1 - \alpha)(t + c)} \leq 1 \Rightarrow \alpha \leq \frac{r + c}{t + c} \quad (\text{A.26})$$

Next we repeat for $\theta_i = L$. Now we check whether the Cooperative type player should still play C in the first period, using the full game payoffs. From playing C the full game payoff

for the Cooperative type is $r + (\alpha)(-l) + (1 - \alpha)(r)$. From playing D the full game payoff for the Cooperative type is: $g + p(-c) + (1 - p)[\alpha(-l) + (1 - \alpha)(r)]$. We compare these two payoffs:

$$\begin{aligned}
 E[U_i^L(\sigma_i, \sigma_{-i})] &\geq E[U_i^L((D, D, C, D), \sigma_{-i})] \\
 r + (\alpha)(-l) + (1 - \alpha)(r) &\geq g + p(-c) + (1 - p)[\alpha(-l) + (1 - \alpha)(r)] \quad (\text{A.27}) \\
 r - g &\geq p(\alpha(l + r) - r - c)
 \end{aligned}$$

But if $\alpha \leq \mu^* = (r - g)/(r - g + l - c)$ then $\alpha < (r + c)/(r + l)$ and $\alpha(l + r) - r - c < 0$, hence the equation above holds for any $p \in [0, 1]$. Therefore playing C for the Cooperative type is better than playing D in period 1, as expected.

□

The expected payoffs for the Cooperative type and Competitive type are:

$$\begin{aligned}
 E[U^L] &= \alpha(r - l) + (1 - \alpha)2r \\
 E[U^H] &= \alpha(r - c) + (1 - \alpha)(r + t)
 \end{aligned} \quad (\text{A.28})$$

We now look at a number of strategy profiles that are also PBE. In each of these strategy profiles, both the Cooperative and Competitive types of both players play D in the first period, and hence beliefs do not update. As the signal is non-informative, any strategy profile in which the Cooperative types coordinate on C is a PBE provided that $\alpha \leq \mu^*$.

Theorem 8 (Uninformative Strategies). *If $\alpha \leq \mu^*$, then each of the following symmetric strategy profiles is PBE with the belief system $\mu_i^{L,H}(\emptyset) = \mu_i^{L,H}(\bar{s}) = \mu_i^{L,H}(\underline{s}) = \alpha$:*

Note that because both players play D in the first period, the signal is not informative and

can be ignored or used as a coordination device for two L players to do the same action. (If they do not coordinate the strategy profile is not an eqm)

- $\sigma_i = (D, D, C, C)$, yielding payoffs

$$E[U_i^L] = -c + (1 - \alpha)r - \alpha l$$

$$E[U_i^H] = -c + (1 - \alpha)t - \alpha c$$

- $\sigma_i = (D, D, C, D)$, yielding payoffs

$$E[U_i^L] = -c + (1 - p)[(1 - \alpha)r - \alpha l] - pc$$

$$E[U_i^H] = -c + (1 - p[(1 - \alpha)t - \alpha c] - pc$$

- $\sigma_i = (D, D, D, C)$, yielding payoffs

$$E[U_i^L] = -c + p[(1 - \alpha)r - \alpha l] - (1 - p)c$$

$$E[U_i^H] = -c + p[(1 - \alpha)t - \alpha c] - (1 - p)c$$

- $\sigma_i = (D, D, D, D)$, yielding payoffs

$$E[U_i^L] = E[U_i^H] = -2c$$

Proof. Because both player types play D in the first period, the first period is irrelevant and the two period game simply becomes a 1 period game in the final period which we have already analyzed. (Lemma 1) □

Lemma 9. *If the Strategy 2 is an equilibrium, then it yields higher expected payoffs for all*

players than the Strategy 1.

Proof. Begin with a Cooperative type player. Let $E[U^L(\text{Strategy1})]$ and $E[U^L(\text{Strategy2})]$ denote the expected payoffs for the Cooperative type player from the Strategy 1 and Strategy 2 profiles, respectively.

$$E[U^L(\text{Strategy1})] = (1 - \alpha)2r + \alpha(-l + p(-c) + (1 - p)(-l))$$

$$E[U^L(\text{Strategy2})] = (1 - \alpha)2r + \alpha(r - l)$$

Clearly, $E[U^L(\text{Strategy2})] > E[U^L(\text{Strategy1})]$ since $r > -pc + (1 - p)(-l)$ for all $p \in [0, 1]$. This is not surprising; the Cooperative type clearly gets a higher payoff if the Competitive type plays C in period 1 rather than D .

Now consider the Competitive type. Once again $E[U^H(\text{Strategy1})]$ and $E[U^H(\text{Strategy2})]$ denote the expected payoffs for Competitive type player from the two strategy profiles.

$$E[U^H(\text{Strategy1})] = (1 - \alpha)(t + p(-c) + (1 - p)t) + \alpha(-2c)$$

$$E[U^H(\text{Strategy2})] = (1 - \alpha)(r + t) + \alpha(r - c)$$

Then we have $E[U^H(\text{Strategy2})] > E[U^H(\text{Strategy1})]$ if,

$$(1 - \alpha)(r + t) + \alpha(r - c) > (1 - \alpha)(t + p(-c) + (1 - p)t) + \alpha(-2c)$$

$$(1 - \alpha)(r - t) + \alpha(r + c) > (1 - \alpha)p(-c - t)$$

$$p > \frac{(1 - \alpha)(t - r) - \alpha(r + c)}{(1 - \alpha)(t + c)}$$

$$p > \frac{t - r}{t + c} - \left(\frac{\alpha}{1 - \alpha} \right) \left(\frac{r + c}{t + c} \right)$$

We know that for the Strategy 2 to be an equilibrium, $p \geq \frac{t-r}{(1-\alpha)(t+c)}$. But,

$$\frac{t-r}{(1-\alpha)(t+c)} > \frac{t-r}{t+c} > \frac{t-r}{t+c} - \left(\frac{\alpha}{1-\alpha} \right) \left(\frac{r+c}{t+c} \right)$$

So if the Strategy 2 is an equilibrium, then it must be that $E[U^L(\text{Strategy2})] > E[U^L(\text{Strategy1})]$.

Hence we see that if the Strategy 2 is an equilibrium, then both Competitive and Cooperative player types get a higher payoff in the Strategy 2 rather than Strategy 1.

□

Lemma 10. *Suppose $\alpha \leq \mu^*$ and $l-c \geq t-r$. Then for any p , at least one of the Strategy 1 or Strategy 2 is an equilibrium.*

Proof. Since $\alpha \leq \mu^*$, then

$$\frac{\alpha}{1-\alpha} \leq \frac{\mu^*}{1-\mu^*} = \frac{r-g}{l-c}$$

and,

$$\left(\frac{\alpha}{1-\alpha} \right) \left(\frac{l-c}{r+c} \right) - \left(\frac{r-g}{r+c} \right) \leq \left(\frac{r-g}{l-c} \right) \left(\frac{l-c}{r+c} \right) - \left(\frac{r-g}{r+c} \right) = 0$$

Since $p \in [0, 1]$ then $p \geq \left(\frac{\alpha}{1-\alpha} \right) \left(\frac{l-c}{r+c} \right) - \left(\frac{r-g}{r+c} \right)$. Further, $p \geq 0 \geq \frac{\alpha-\mu^*}{\alpha-\alpha\mu^*}$. Therefore when $\alpha \leq \mu^*$, the Strategy 1 is an equilibrium if,

$$\left(\frac{\alpha}{1-\alpha} \right) \left(\frac{l-c}{t+c} \right) + \left(\frac{t-r}{t+c} \right) \geq p$$

The Strategy 2 is an equilibrium if,

$$p \geq \frac{t-r}{(1-\alpha)(t+c)}$$

There will exist a p that does not satisfy either of these iff,

$$\frac{t-r}{(1-\alpha)(t+c)} > \left(\frac{\alpha}{1-\alpha}\right) \left(\frac{l-c}{t+c}\right) + \left(\frac{t-r}{t+c}\right) \quad (\text{A.29})$$

$$t-r > \alpha(l-c) + (1-\alpha)(t-r) \quad (\text{A.30})$$

$$t-r > l-c \quad (\text{A.31})$$

So we can conclude that as long as $l-c \geq t-r$, then if $\alpha \leq \mu^*$, then for any monitoring level, either the Strategy 2 or Strategy 1 is an equilibrium.

Note that $l-c$ is measuring the downside risk of being taken advantage of compared to the status quo, while $t-r$ is measuring the benefit of comparative advantage to the Competitive types relative to mutual cooperation. \square

Lemma 11. *Strategies 1 and 2 yield higher expected payoffs for all players than the Uninformative Strategies, when $\alpha \leq \mu^*$.*

Proof. Note, we focus on $\alpha \leq \mu^*$ since this must be true for the Uninformative Strategies equilibrium.

First note that of all the the Uninformative Strategies, $\sigma_i = (D, D, C, C)$ yields the highest payoff for both the Competitive and Cooperative types. Therefore it suffices to compare just to this strategy.

Consider the Cooperative type first. From Theorem 10 we have that $E[U_i^L(\text{Uninformative})] = -c + (1-\alpha)r - \alpha l$ while from Theorem 2, $E[U^L(\text{Strategy2})] = (1-\alpha)2r + \alpha(r-l)$. It is obvious by inspection that $E[U^L(\text{Strategy2})] > E[U_i^L(\text{Uninformative})]$. This is not surprising: the Strategy 2 is the best for the Cooperative type. Now we verify conditions under

which the Strategy 1 yields a higher payoff than the Uninformative Strategy:

$$\begin{aligned}
 E[U_i^L(\text{Strategy1})] - E[U_i^L(\text{Uninformative})] &= (1 - \alpha)(r + c) + \alpha(1 - p)(c - l) \\
 &= (1 - \alpha) \left[r + c - \left(\frac{\alpha}{1 - \alpha} \right) (1 - p)(l - c) \right] \\
 &\geq (1 - \alpha) \left[r + c - \left(\frac{r - g}{l - c} \right) (l - c) \right] \\
 &\geq (1 - \alpha) [c + g] \\
 &\geq 0
 \end{aligned}$$

Now consider the Competitive player. The relevant payoffs are,

$$\begin{aligned}
 E[U^H(\text{Uninformative})] &= -c + (1 - \alpha)t - \alpha c \\
 E[U^H(\text{Strategy1})] &= (1 - \alpha)(t + p(-c) + (1 - p)t) + \alpha(-2c) \\
 E[U^H(\text{Strategy2})] &= (1 - \alpha)(r + t) + \alpha(r - c)
 \end{aligned}$$

Examining the payoffs, it is clear that $E[U^H(\text{Strategy2})] \geq E[U^H(\text{Uninformative})]$ and $E[U^H(\text{Strategy1})] \geq E[U^H(\text{Uninformative})]$.

Hence we conclude that when $\alpha \leq \mu^*$, then Strategies 1 and 2 yield higher payoffs for both players than any of the uninformative strategies.

□

The following lemma gives an upper bound on the belief α , above which only the strategy profile in which all players defect in both periods is an equilibrium.

Lemma 12. *If $\alpha > \gamma^* = \frac{2r+c-g}{2r+l-g}$, then any monitoring level the only equilibrium is the Defect Strategy.*

Proof. Suppose that $\alpha > \gamma^*$. Begin by noting that $\gamma^* > \mu^*$:

$$\begin{aligned}
 r + c &> 0 \\
 2r + c - g &> r - g \\
 (2r + c - g)(l - c) &> (r - g)(l - c) \\
 c(r - g) + (2r + c - g)(l - c) &> l(r - g) \\
 (2r - g)(r - g) + c(r - g) + (2r + c - g)(l - c) &> (2r - g)(r - g) + l(r - g) \\
 (2r + c - g)(r - g + l - c) &> (r - g)(2r + l - g) \\
 \frac{2r + c - g}{2r + l - g} &> \frac{r - g}{r - g + l - c} \\
 \gamma^* &> \mu^*
 \end{aligned}$$

Therefore for $\alpha > \gamma^*$, only the Strategy 1 can be an equilibrium, since the Strategy 2 requires $\alpha \leq \mu^*$. Next, note that if $\alpha > \gamma^*$, then

$$\begin{aligned}
 \alpha &> \frac{2r + c - g}{2r + l - g} \\
 \frac{\alpha}{1 - \alpha} &> \frac{2r + c - g}{l - c} \\
 \left(\frac{\alpha}{1 - \alpha} \right) (l - c) &> 2r + c - g \\
 \left(\frac{\alpha}{1 - \alpha} \right) \left(\frac{l - c}{r + c} \right) - \left(\frac{r - g}{r + c} \right) &> 1
 \end{aligned}$$

But for the Strategy 1 to be an equilibrium, we need the monitoring level to satisfy

$$p \geq \left(\frac{\alpha}{1 - \alpha} \right) \left(\frac{l - c}{r + c} \right) - \left(\frac{r - g}{r + c} \right)$$

Hence if $\alpha > \gamma^*$, then no monitoring level $p \in [0, 1]$ will satisfy this condition, and the Strategy 1 will not be an equilibrium for any monitoring level. Therefore only the Defecting

Strategy will be an equilibrium.

Note that such an $\gamma^* \in (0, 1)$ always exists since $\frac{2r+c-g}{2r+l-g} \in (0, 1)$, so for any set of parameter values, there is always an upper bound $\gamma^* \in (0, 1)$. □

Appendix B

Appendix for Chapter 3 – Quantitative Analysis

B.1 Appendix I – Control Variables

The following control variables are used in the statistical models. This appendix provides details on how each of the variables is measured, and the source of the data used. The primary data sets are Correlates of War (COW) Militarized Interstate Dispute data set and National Material Capabilities data set. I use the EUGene (v. 3.204) program to generate dyad year observations.¹ A number of the variables are created using the procedures used by Bennett and Stam (2004).²

Balance of power: The balance of power (in terms of material capabilities) might have effects in both directions because it could be a factor in both the benefits of cooperation and

¹D. Scott Bennett and Allan C. Stam, “EUGene: A Conceptual Manual,” *International Interactions* 26 (2000): 179–204.

²D. Scott Bennett and Allan C. Stam, *The Behavioral Origins of War* (Ann Arbor, MI: University of Michigan Press, 2004).

the costs of maintaining status quo. Equally balanced states may be more willing to sign treaties in the first place, as in those cases limitations are more likely to be even. Many arms control scholars have argued that arms control agreements are more likely to emerge when military capabilities are evenly balanced.³ Equally matched dyads may have more to gain from cooperation; without it, both sides could pursue arms racing and expend resources on the build up. However, some treaties are imposed rather than signed completely voluntarily, so highly uneven dyads might be those where a powerful state can impose its preferred treaty solution on a weaker adversary. Hegemony might lead to more intrusive information demands in treaties. Here, dyads facing asymmetry may face more cost to maintaining the status quo, such as a conflict continuing without a surrender.

The question over whether parity or inequality leads to more or less cooperation, or a certain type of cooperation, is not dissimilar from the debate in security studies on which types of dyads are more war prone, where arguments have been made both ways. I generate the balance of power variable using CINC scores as the power measure. In non-directed dyads, it does not matter which state is A or B, and I simply set the greater power state as A. $Balance\ of\ power = \frac{CountryA\ power}{sum(A+B\ power)}$ The variable ranges from .5=even balance of power to 1 = asymmetric balance of power. The power scores for each state in the dyad come from the COW dataset.

Recent conflict: Another sign that states may have higher benefits from cooperation would be if they recently engaged in conflict. Avoiding competition, future conflict, or a continuation of the recent conflict would give states more to gain from cooperation. Numerous wars are ended with ceasefire agreements, some of which have arms control provisions and some which do not. Anecdotal evidence also suggests that arms control agreements are sometimes

³Thomas Risse-Kappen, "Did Peace Through Strength End the Cold War? Lessons from INF," *International Security* (1991): 162-188.

signed following crises where escalation to war was avoided. I create a binary recent conflict variable which is coded 1 if a MID level 3 or higher occurred in the last 5 years, and zero otherwise.⁴

Arms race: States engaged in an arms race may have different incentives for arms control than those not spending resources on military competition. This variable is likely to capture the costs of maintaining the status quo in some cases. I construct the arms race variable using Diehl's (1983) definition of an 8 percent or more growth in military expenditures over 5 years in both states.⁵ This measure was used by Bennett and Stam (2004) in their analysis on the causes of war, and is considered the best available in more recent studies as well, including Rider (2011).⁶ Military expenditures data comes from the COW National Material Capabilities data.

Some scholars have been concerned that this measure does not account for whether the arms build up is actually directed at the other state in the dyad.⁷ However, it may be the case that "inadvertent" arms races – or in other words, mutual state build ups not directed at one another – can actually lead rivalries or further arms races to develop. States would have incentives to create arms control agreements during build ups as a way to avoid rivalries or more direct competition in the future. Therefore the simpler Diehl measure, which does not include information about the relationship between the states, is still more appropriate

⁴I also tried this variable with a 3 year window, or with using ICB crises instead. There are no changes in the substantive results.

⁵Paul F. Diehl, "Arms Races and Escalation: A Closer Look," *Journal of Peace Research* 20, no. 3 (1983): 205–212.

⁶Bennett and Stam, *The Behavioral Origins of War*, see n. 2; Toby J. Rider, Michael G. Findley, and Paul F. Diehl, "Just Part of the Game? Arms Races, Rivalry, and War," *Journal of Peace Research* 48, no. 85 (2011): 85–100.

⁷Douglas M. Gibler, Toby J. Rider, and Marc L. Hutchinson, "Taking Arms Against a Sea of Troubles: Conventional Arms Races During Periods of Rivalry," *Journal of Peace Research* 42, no. 2 (Mar. 2005): 131–147.

for the study of arms control design.⁸

Wealth: Countries may have different baseline capabilities to observe their adversaries and different levels of resources to finance monitoring measures. These factors are likely to affect the cost of monitoring. I use a wealth measure to capture differences in technology or resources that might be available to states - the wealthier states are the lower their cost of monitoring should be. It may also be the case that wealthier states can afford to maintain arms races for longer than poorer states and might therefore have different incentives for pursuing arms control treaties, or may prefer a different kind of arms control treaty than a poor counterpart.

In order to get a measure with maximum coverage over the time frame and number of countries in my data, I use the energy component of national capabilities as a proxy for wealth. I include the measure for both state A and state B because the both states are agreeing to a monitoring level in bargaining and the burden of costs of monitoring may be negotiated as well (for example, with the wealthier state contributing more to the costs of monitoring.) Although a measure of wealth disparity may also be an relevant control variable, I start with the assumption that the key difference may be between relatively wealthy vs. relatively poor dyads. I create the measure as: $\ln(energyA + energyB)$. As a robustness check, I also create the same measure using GDP, where data is only available after 1945. For this alternative measure, I use Kristian Skrede Gleditsch's Expanded Trade and GDP Data (v.4.1).⁹

⁸For studying arms control, ideally an arms race variable would also incorporate expected expenses in military planning for future years, as arms control may also be a way to avoid an impending arms race rather than mitigate an ongoing one. However, data limitations prevent me from including military planning in this analysis.

⁹Kristian Skrede Gleditsch, "Expanded Trade and GDP Data," *Journal of Conflict Resolution* 46, no. 5 (Oct. 2002): 712-724.

Contiguity: States which share a land border are more likely to have militarized disputes and contested territory. This suggests they they are also more likely to have agreements which resolve those disputes, or manage territorial tensions. Again, these states may have more to gain from cooperation than non-contiguous dyads, or perhaps a greater benefit from cheating on an agreement. I use a binary variable of whether the dyad is contiguous on land, based on COW data.

Nuclear Weapons: Nuclear armed states face more acute existential threats from war - escalation to nuclear exchange could mean elimination. These states might therefore have stronger incentives for cooperation, both in the nuclear arms control arena, but also in conventional arms, because the costs associated with maintaining a risky or unstable status quo are very high. Additionally, it may be the case that nuclear weapons create a new arena for cooperation, and nuclear states are likely to have more agreements than nonnuclear states because non-nuclear states simply do not have that technology to limit. I code nuclear weapons =1 if both states in the dyad possess nuclear weapons and 0 otherwise. This coding is based on Bennett and Stam (2004).

Ongoing treaty: Having ongoing cooperation could make new cooperation either more and less likely. First, new cooperation could be more likely if the prior treaty or treaty negotiations set up a certain agenda for cooperation, identifying other weapons or activities that should be limited as separate treaties. It is also possible that the same negotiations between two states actually address multiple issues that result in multiple treaties, signed over a close period of time. Additionally, if a pair of states has participated before, on any type of security agreement, it might be either more likely to do so again, or more likely to pursue a more intrusive agreement. The experience of prior cooperation could have affected state's beliefs about their adversaries, making different kinds of cooperation possible in the

future.¹⁰

On the other hand, having recently signed a treaty could mean that the states are essentially already doing all the cooperation that was possible. If they had a highly monitored treaty last year, they are not going to need another highly monitored one this year, as the measures are already in place. The situation here is not unlike that of studies of war initiation, where scholars usually control for “ongoing conflict.” If two states were engaged in a war the prior period, it would be difficult for them to initiate a war in the current period since of course they are in one already.

The ongoing treaty variable is coded as 1 if a treaty was signed by the dyad in the last 5 years, and zero otherwise. Few arms control treaties have limited duration times, while others remain technically in force even though they are no longer explicitly followed by their participants. Therefore defining ongoing treaties by stated duration or “in force” status is not useful for capturing the possible effects of recently concluded cooperation. The data on treaty signature is from my adversarial agreements data set.

Treaty experience: As discussed in Chapter 3, I test whether state’s experience with arms control outside the current dyad of observation has an effect on the probability of cooperation with the current partner. I create a treaty experience variable which is coded 1 if both states in the dyad have participated in a treaty with another partner in the last 10 years, and 0 otherwise. I also test an alternative coding of this variable, where treaty experience is coded 1 if one of the states participated in a treaty with another state in the last 5 years. The results are substantively similar, with no consistent significant effects observed for either variable. Finally, I test a treaty experience within the dyad, which is coded 1 if the two states

¹⁰The intuition among policy practitioners is that cooperation builds trust, making more intrusive agreements possible in the next round. However, cooperation plagued by violations might have the opposite effect. A better measure here would be a characterization of prior compliance record, but unfortunately such data is not available.

participated in treaty with one another in the last 5 years. This is essentially a longer time frame version of the “ongoing treaty” variable noted above.

Temporal and dyadic dependence - To correct for possible time dependence, I use Carter and Signorino’s (2009) method, including time, time squared and and time cubed variables.¹¹ I address possible dyadic dependence by using dyad clustered standard errors.

¹¹David B. Carter and Curtis S. Signorino, “Back to the Future: Modeling Time Dependence in Binary Data,” *Political Analysis* 18, no. 3 (2010): 271–292.

B.2 Appendix II – Full Statistical Results and Robustness Tests

This appendix provides the full regression results to support the findings summarized in chapter 3. Several alternate model specifications are included in each section, as well as the most important robustness checks. The key explanatory variables, capturing top down and bottom up domestic political volatility are listed at the top of each table.

B.2.1 Logit Results for Treaty Occurrence

Tables B.1 and B.2 show the full results for the logit models of treaty outcomes. Note that time, time squared and time cubed controls were included in this model but coefficients are not reported. All were significant but very close to 1 for the odds ratio, indicating a very small magnitude effect. Model 1 is the main model which is reported in the chapter. The following models introduce several additional variable to test alternative explanations.

Model 5 includes dyad fixed effects. Although the results hold in this specification as well, fixed effects are problematic for this kind of analysis, and I do not use them for the main model. The idea is that fixed effects would capture whatever independent effect there might be from the nature of the specific unit that is not captured by other variables. In this case, the unit is a dyad, so the fixed effects model is controlling for the unobserved effect of the observation being for example, US-Russia vs. US-China. While at first appealing, the approach has a number of important drawbacks. First, it is not clear from a substantive perspective that all unit level observations would be expected to have some unobserved variation that affects their treaty outcomes. The key differences that we would expect to vary between dyads are already reflected in the other control variables. Rather, we would expect that interactions between states are similar and comparable in nature. Instead of controlling for possibly unobserved differences between all states, in Model 4 I try controlling for some

specific dyads where we might be most concerned about an unobserved characteristic unique to that relationship, such as ideological competition between Cold War adversaries US and USSR, or cultural and religious tension between India and Pakistan.

Second, fixed effects models drop all observations where there is no variation in the dependent variable in all observations of the unit. So if a dyad never experiences a treaty, all dyad year observations for that unit are dropped from the analysis. However, the kind of dyad never experiences a treaty could still be informative about when treaties are more likely to happen. Since treaties are relatively rare, many dyads never have treaty observations. My goal is to directly model the low probability of treaties in those cases rather than dropping them. Finally, my approach in not using fixed effects for the main models is consistent with existing work in international relations which employs a similar dyad-year structure to study conflict outcomes.

B.2.2 Generalized Ordered Logit Results for Treaty Types

Tables B.3 and B.4 show the results for several specifications of the generalized logit model. Like a regular logit model, the first level represents a comparison of the probability of a treaty being at the two higher levels (low or high monitoring) against the first one (no treaty). The second level contrasts the first two lower categories (no treaty and low monitoring) with the third (high monitoring). This is essentially the same as two logistic regressions. In panel 1, the first category = 0, and the second and third = 1. Then in the second panel, the first and second category = 0 and the third = 1.

Because of limitations in the Clarify program used for interpreting model results, the generalized ordered logit here is fully unconstrained. One advantage of the `gologit2` model is that some variables can be constrained to have proportional odds across the levels, while others can vary. (In a regular ordered logit, all variables are constrained to proportional odds across levels.) None of the variables are set to be constrained in the regressions presented.

Table B.1: Logit Results – Effects on Probability of a Treaty (odds ratios reported)

	Model 1	Model 2	Model 3	Model 4	Model 5 (FE)
cabinet or executive change	1.475*** (0.076)	1.248*** (0.073)	1.447*** (0.075)	1.448*** (0.075)	1.252*** (0.057)
balance of power	0.0106*** (0.002)	0.00642*** (0.001)	0.0169*** (0.003)	0.0173*** (0.003)	0.0115*** (0.004)
contiguity	3.709*** (0.412)	4.470*** (0.605)	3.884*** (0.417)	3.899*** (0.421)	1.556* (0.284)
recent treaty	5.716*** (0.515)	6.019*** (0.685)	4.833*** (0.449)	4.832*** (0.450)	1.137 (0.087)
nuclear weapons	2.075** (0.558)	2.055* (0.614)	1.492 (0.404)	1.488 (0.461)	3.181*** (0.495)
arms race	1.552*** (0.076)	1.751*** (0.095)	1.579*** (0.078)	1.579*** (0.078)	1.598*** (0.077)
recent MID	1.875*** (0.194)	1.229 (0.150)	1.967*** (0.212)	1.957*** (0.224)	1.246** (0.101)
wealth	1.740*** (0.036)		1.604*** (0.034)	1.603*** (0.034)	1.620*** (0.032)
wealth (gdp)		2.100*** (0.065)			
satellites			2.536*** (0.220)	2.551*** (0.224)	
treaty experience			0.935 (0.072)	0.935 (0.072)	
rivalry			1.141 (0.246)	1.174 (0.260)	
US-Russia				1.195 (0.360)	
India-Pakistan				0.589 (0.205)	
number of dyads	688027	595276	688027	688027	62744

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table B.2: Logit Results – Effects on Probability of a Treaty (odds ratios reported)

	Model 1	Model 2	Model 3	Model 4	Model 5 (FE)
demonstrations, riots or strikes	1.703*** (0.082)	1.465*** (0.077)	1.737*** (0.084)	1.738*** (0.084)	1.242*** (0.065)
balance of power	0.0113*** (0.002)	0.00675*** (0.002)	0.0185*** (0.004)	0.0185*** (0.004)	0.0143*** (0.006)
contiguity	3.427*** (0.403)	4.158*** (0.573)	3.985*** (0.424)	3.984*** (0.427)	1.368 (0.281)
recent treaty	7.047*** (0.690)	6.483*** (0.780)	6.080*** (0.611)	6.081*** (0.611)	1.793*** (0.159)
nuclear weapons	1.626 (0.441)	1.757 (0.532)	1.206 (0.306)	1.218 (0.354)	2.520*** (0.441)
arms race	1.734*** (0.085)	1.794*** (0.098)	1.778*** (0.087)	1.778*** (0.087)	1.585*** (0.079)
recent MID	1.793*** (0.186)	1.326* (0.160)	2.078*** (0.231)	2.086*** (0.247)	1.381*** (0.130)
wealth	1.710*** (0.038)		1.554*** (0.035)	1.554*** (0.035)	1.444*** (0.038)
wealth (gdp)		2.015*** (0.064)			
satellites			2.547*** (0.212)	2.548*** (0.214)	
treaty experience			1.008 (0.081)	1.008 (0.081)	
rivalry			0.728 (0.182)	0.736 (0.196)	
US-Russia				0.957 (0.302)	
India-Pakistan				0.813 (0.277)	
number of dyads	631323	578911	631323	631323	43938

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Constraining some variables to proportional odds (either for theoretical reasons or using statistical tests to identify where proportionality conditions are met) would be likely to further strengthen the results of the models.

Unlike the other two models (logit and mlogit) the generalized logit models were run without controlling for time (t, t^2, t^3). The `gologit2` model in Stata performs poorly and very slowly for complex models. Experiments on several specifications showed that including the time controls does not affect the direction, magnitude or in most cases even the exact numerical value of the estimates. Therefore, for better modeling performance, the time controls were not included in these regressions. For similar reasons, controls for India–Pakistan and US–Russia dyads could not be both included at the same time without causing stalls in the software.

B.2.3 Multinomial Results for Treaty Types

Tables B.5 and B.6 present the results for multinomial models. Controls for time, time squared and time cubed were included in this model but coefficients are not reported. All were significant but very close to 1 for the odds ratio.

Figures B.1 and B.2 show the results of simulations using Clarify which isolate the effect of domestic political volatility at different levels of beliefs about the adversary. These figures can be interpreted in the same way as the figures for generalized ordered model which are provided and discussed in the main text of Chapter 3.

Table B.3: GOLogit – Cabinet or Executive Change Top Down Volatility
Effects on Probability of Treaty Types (generalized ordered logit, odds ratios reported)

	M 1		M2		M3		M4	
1: Low monitoring & High monitoring compared to no treaty								
cabinet or exec change	1.004	(0.102)	0.935	(0.096)	1.005	(0.103)	1.002	(0.102)
policy distance	0.879*	(0.045)	0.851***	(0.042)	0.877*	(0.045)	0.874*	(0.046)
CE change X policy distance	1.240***	(0.074)	1.221***	(0.074)	1.240***	(0.074)	1.244***	(0.073)
balance of power	0.0102***	(0.002)	0.0160***	(0.004)	0.00970***	(0.002)	0.0104***	(0.002)
contiguity	3.969***	(0.527)	3.959***	(0.598)	3.964***	(0.529)	4.019***	(0.538)
recent treaty	15.30***	(1.405)	11.55***	(1.129)	14.43***	(1.338)	15.34***	(1.405)
nuclear weapons	2.082**	(0.588)	1.456	(0.423)	2.075*	(0.593)	2.017*	(0.653)
arms race	1.852***	(0.111)	1.633***	(0.101)	1.840***	(0.110)	1.852***	(0.111)
recent MID	1.223	(0.156)	1.264	(0.169)	1.217	(0.157)	1.200	(0.183)
wealth	1.829***	(0.049)	1.751***	(0.049)	1.848***	(0.050)	1.828***	(0.049)
satellites			3.016***	(0.281)				
treaty experience					0.778**	(0.075)		
US-Russia							1.470	(0.561)
India-Pakistan							0.826	(0.242)
2: High monitoring compared to Low Monitoring and no treaty								
cabinet or exec change	0.824	(0.095)	0.818	(0.095)	0.832	(0.097)	0.828	(0.095)
policy distance	0.848**	(0.053)	0.839**	(0.051)	0.850*	(0.054)	0.845**	(0.055)
CE change X policy distance	1.347***	(0.083)	1.309***	(0.082)	1.345***	(0.083)	1.346***	(0.082)
balance of power	0.0115***	(0.003)	0.0177***	(0.005)	0.0109***	(0.003)	0.0116***	(0.003)
contiguity	3.338***	(0.474)	3.400***	(0.555)	3.355***	(0.480)	3.374***	(0.484)
recent treaty	12.48***	(1.340)	9.402***	(1.044)	11.45***	(1.236)	12.43***	(1.341)
nuclear weapons	2.293**	(0.662)	1.715	(0.507)	2.257**	(0.660)	2.351**	(0.763)
arms race	1.652***	(0.131)	1.357***	(0.114)	1.633***	(0.131)	1.648***	(0.131)
recent MID	1.558**	(0.221)	1.584**	(0.233)	1.536**	(0.220)	1.573**	(0.245)
wealth	1.699***	(0.052)	1.669***	(0.055)	1.725***	(0.054)	1.699***	(0.052)
satellites			2.321***	(0.261)				
treaty experience					0.678**	(0.095)		
US-Russia							1.052	(0.387)
India-Pakistan							0.471*	(0.140)
number of dyads	513024		448197		513024		513024	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table B.4: GOLogit – Demonstrations, Riots or Strikes Bottom Up Volatility
Effects on Probability of Treaty Types (generalized ordered logit, odds ratios reported)

	M 1		M2		M3		M4	
1: Low monitoring & High monitoring compared to no treaty								
demonstrations, riots or strikes	1.268*	(0.128)	1.279*	(0.128)	1.283*	(0.130)	1.273*	(0.129)
policy distance	0.865*	(0.054)	0.860**	(0.048)	0.865*	(0.054)	0.865*	(0.055)
drs X policy distance	1.196**	(0.079)	1.133*	(0.069)	1.193**	(0.079)	1.194**	(0.079)
balance of power	0.0103***	(0.002)	0.0162***	(0.004)	0.00958***	(0.002)	0.0104***	(0.002)
contiguity	3.974***	(0.519)	3.967***	(0.595)	3.967***	(0.522)	3.995***	(0.532)
recent treaty	14.52***	(1.361)	11.03***	(1.089)	13.45***	(1.274)	14.54***	(1.357)
nuclear weapons	1.853*	(0.515)	1.319	(0.379)	1.841*	(0.520)	1.834	(0.587)
arms race	1.859***	(0.111)	1.637***	(0.102)	1.846***	(0.111)	1.858***	(0.111)
recent MID	1.245	(0.164)	1.288	(0.174)	1.236	(0.164)	1.248	(0.195)
wealth	1.782***	(0.048)	1.715***	(0.048)	1.806***	(0.050)	1.782***	(0.048)
satellites			3.005***	(0.281)				
treaty experience					0.721***	(0.070)		
US-Russia							1.189	(0.469)
India-Pakistan							0.812	(0.236)
2: High monitoring compared to Low Monitoring and no treaty								
demonstrations, riots or strikes	1.129	(0.138)	1.205	(0.146)	1.147	(0.141)	1.132	(0.139)
policy distance	0.838*	(0.061)	0.857*	(0.056)	0.839*	(0.061)	0.837*	(0.061)
drs X policy distance	1.276**	(0.099)	1.184*	(0.085)	1.271**	(0.099)	1.274**	(0.100)
balance of power	0.0110***	(0.003)	0.0174***	(0.005)	0.0103***	(0.003)	0.0110***	(0.003)
contiguity	3.433***	(0.482)	3.462***	(0.557)	3.439***	(0.487)	3.422***	(0.491)
recent treaty	11.63***	(1.299)	8.810***	(1.006)	10.59***	(1.199)	11.57***	(1.292)
nuclear weapons	1.989*	(0.560)	1.524	(0.438)	1.959*	(0.560)	2.111*	(0.665)
arms race	1.651***	(0.129)	1.355***	(0.114)	1.633***	(0.129)	1.643***	(0.129)
recent MID	1.526**	(0.226)	1.582**	(0.240)	1.510**	(0.226)	1.587**	(0.256)
wealth	1.670***	(0.050)	1.640***	(0.054)	1.697***	(0.053)	1.670***	(0.050)
(resources)								
satellites			2.302***	(0.257)				
treaty experience					0.659**	(0.094)		
US-Russia							0.801	(0.308)
India-Pakistan							0.458**	(0.134)
number of dyads	508666		443112		508666		508666	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

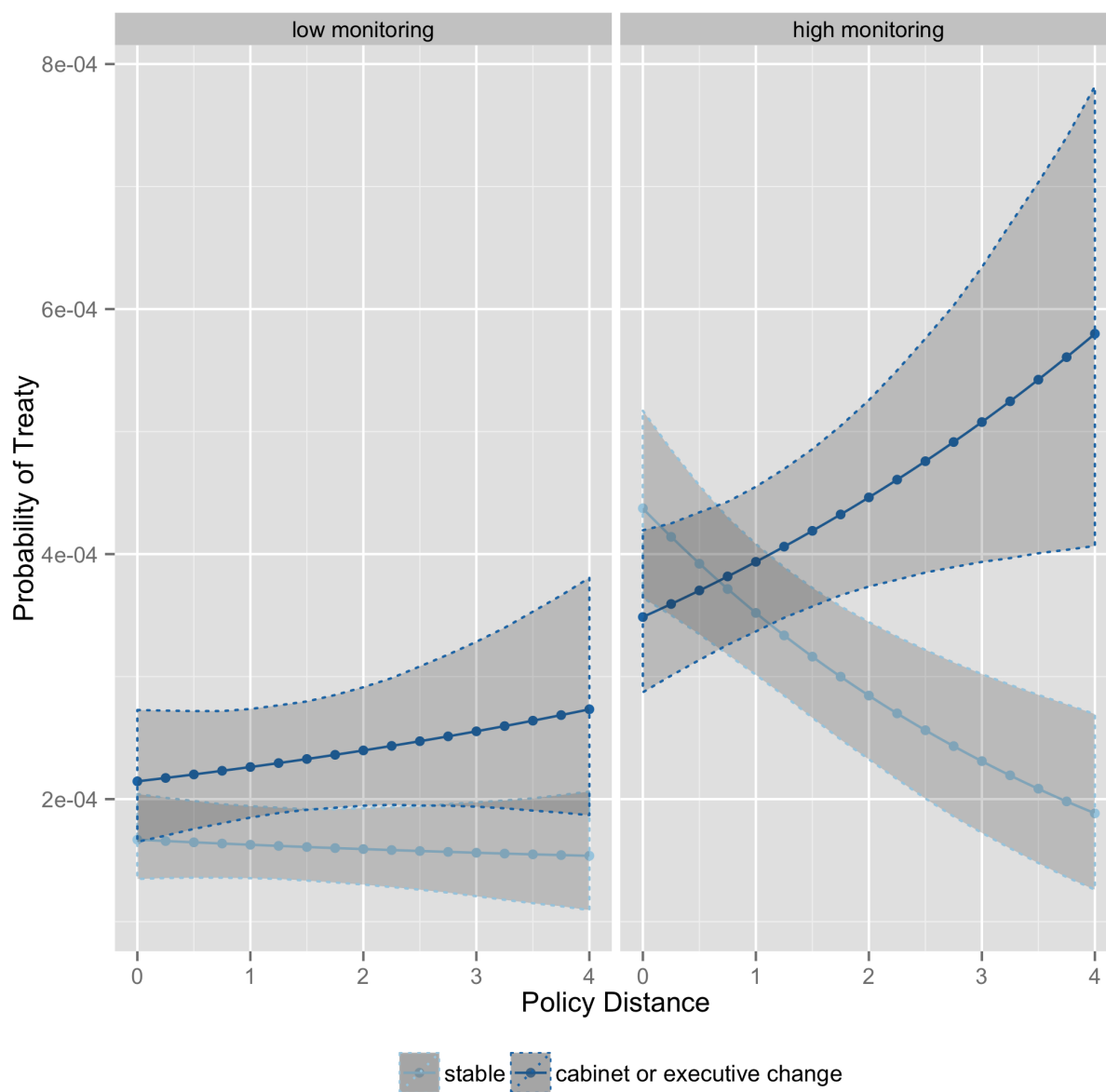


Figure B.1: Effects of Cabinet or Executive Change on Treaty Types (Multinomial Logit)

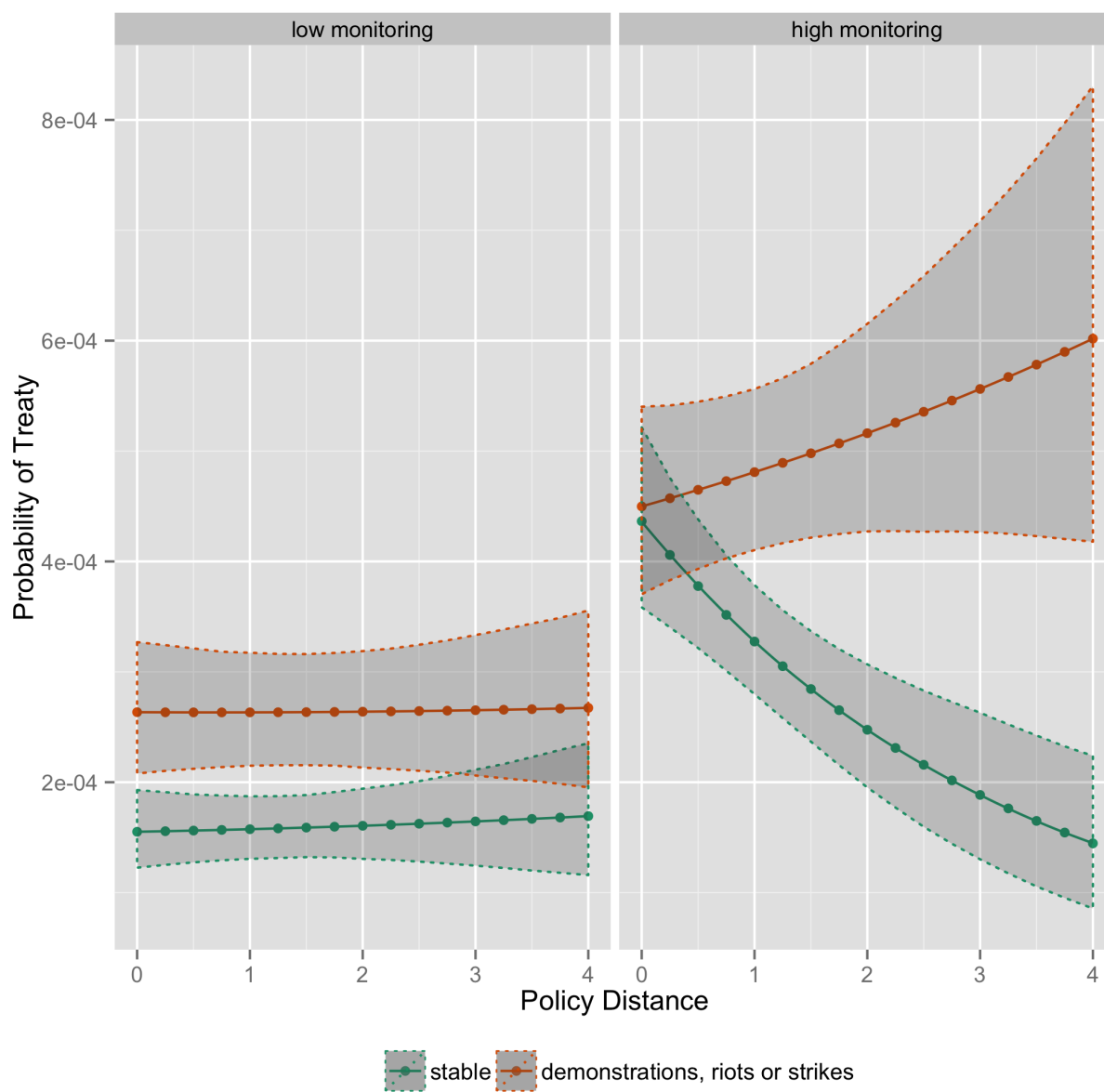


Figure B.2: Effects of Demonstrations, Riots and Strikes on Treaty Types (Multinomial Logit)

Table B.5: MLogit – Cabinet or Executive Change Top Down Volatility
Effects on Probability of Treaty Types (multinomial logit, relative risk ratios reported)

	M 1		M2		M3		M4	
1: Low Monitoring ^a								
cabinet or exec change	1.278	(0.178)	1.028	(0.148)	1.278	(0.178)	1.272	(0.177)
policy distance	0.977	(0.054)	0.906	(0.048)	0.976	(0.054)	0.977	(0.054)
CE change X	1.085	(0.092)	1.130	(0.099)	1.085	(0.092)	1.089	(0.092)
policy distance								
balance of power	0.00933**	(0.002)	0.0178***	(0.005)	0.00917**	(0.002)	0.00918**	(0.002)
contiguity	4.750***	(0.782)	4.656***	(0.826)	4.747***	(0.783)	4.752***	(0.800)
recent treaty	13.06***	(2.203)	12.77***	(2.357)	12.90***	(2.227)	13.01***	(2.208)
nuclear weapons	1.446	(0.398)	1.100	(0.304)	1.448	(0.401)	1.392	(0.429)
arms race	2.218***	(0.175)	2.096***	(0.164)	2.213***	(0.175)	2.219***	(0.175)
recent MID	0.856	(0.140)	0.913	(0.153)	0.855	(0.140)	0.818	(0.156)
wealth	2.046***	(0.066)	1.870***	(0.070)	2.053***	(0.068)	2.049***	(0.066)
satellites			3.352***	(0.447)				
treaty experience					0.933	(0.135)		
US-Russia							1.360	(0.518)
India-Pakistan							1.675	(0.462)
2: High Monitoring								
cabinet or exec change	0.796	(0.099)	0.814	(0.102)	0.797	(0.099)	0.796	(0.099)
policy distance	0.805**	(0.054)	0.809***	(0.051)	0.804**	(0.054)	0.796***	(0.055)
CE change X	1.405***	(0.099)	1.327***	(0.094)	1.406***	(0.099)	1.410***	(0.099)
policy distance								
balance of power	0.00850**	(0.002)	0.0131***	(0.004)	0.00806**	(0.002)	0.00890**	(0.002)
contiguity	3.697***	(0.556)	3.703***	(0.613)	3.693***	(0.558)	3.775***	(0.575)
recent treaty	6.249***	(0.834)	7.028***	(1.105)	5.958***	(0.783)	6.298***	(0.836)
nuclear weapons	2.725**	(0.862)	1.963*	(0.634)	2.713**	(0.870)	2.713**	(0.973)
arms race	1.611***	(0.123)	1.351***	(0.110)	1.597***	(0.123)	1.611***	(0.124)
recent MID	1.613**	(0.242)	1.673***	(0.257)	1.602**	(0.242)	1.617**	(0.269)
wealth	1.729***	(0.055)	1.690***	(0.060)	1.750***	(0.057)	1.726***	(0.055)
satellites			2.530***	(0.295)				
treaty experience					0.700**	(0.097)		
US-Russia							1.359	(0.544)
India-Pakistan							0.414**	(0.138)
number of dyads	513024		448197		513024		513024	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

^aNo Treaty is the reference category

Table B.6: MLogit – Demonstrations, Riots or Strikes Bottom Up Volatility
Effects on Probability of Treaty Types (multinomial logit, relative risk ratios reported)

	M 1	M2	M3	M4
1: Low Monitoring ^a				
demonstrations, riots or strikes	1.697*** (0.239)	1.467** (0.208)	1.709*** (0.241)	1.694*** (0.241)
policy distance	1.018 (0.070)	0.947 (0.060)	1.018 (0.070)	1.018 (0.070)
Dem, riot, strike	0.984 (0.076)	1.007 (0.076)	0.983 (0.076)	0.983 (0.077)
X policy distance				
balance of power	0.00968***(0.003)	0.0190*** (0.006)	0.00924***(0.003)	0.00959***(0.003)
contiguity	4.549*** (0.760)	4.528*** (0.818)	4.544*** (0.762)	4.570*** (0.777)
recent treaty	13.35*** (2.409)	13.42*** (2.650)	12.90*** (2.373)	13.32*** (2.418)
nuclear weapons	1.333 (0.374)	1.030 (0.293)	1.331 (0.377)	1.292 (0.404)
arms race	2.213*** (0.175)	2.089*** (0.165)	2.204*** (0.174)	2.214*** (0.175)
recent MID	0.897 (0.148)	0.946 (0.158)	0.894 (0.147)	0.857 (0.166)
wealth	1.986*** (0.066)	1.824*** (0.069)	2.003*** (0.067)	1.989*** (0.066)
satellites		3.368*** (0.450)		
treaty experience			0.797 (0.117)	
US-Russia				1.295 (0.504)
India-Pakistan				1.484 (0.418)
2: High Monitoring				
demonstrations, riots or strikes	1.030 (0.134)	1.138 (0.147)	1.040 (0.136)	1.039 (0.137)
policy distance	0.752*** (0.064)	0.791** (0.059)	0.752*** (0.064)	0.751*** (0.064)
Dem, riot, strike	1.423*** (0.139)	1.274** (0.112)	1.420*** (0.138)	1.418*** (0.139)
X policy distance				
balance of power	0.00848***(0.002)	0.0130*** (0.004)	0.00800***(0.002)	0.00869***(0.002)
contiguity	3.767*** (0.555)	3.759*** (0.615)	3.759*** (0.556)	3.784*** (0.572)
recent treaty	5.878*** (0.824)	6.741*** (1.113)	5.593*** (0.772)	5.901*** (0.823)
nuclear weapons	2.330** (0.718)	1.721 (0.545)	2.318** (0.724)	2.392* (0.834)
arms race	1.609*** (0.123)	1.345*** (0.110)	1.595*** (0.123)	1.608*** (0.123)
recent MID	1.644** (0.256)	1.715*** (0.272)	1.633** (0.256)	1.696** (0.291)
wealth	1.682*** (0.054)	1.651*** (0.058)	1.703*** (0.055)	1.679*** (0.053)
satellites		2.486*** (0.293)		
treaty experience			0.691** (0.096)	
US-Russia				0.975 (0.406)
India-Pakistan				0.443* (0.144)
number of dyads	508666	443112	508666	508666

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

^aNo Treaty is the reference category

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Interviews

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Interview with the author, Moscow, Russian Federation, June 6, 2013.

Alexei Arbatov, Senior Scholar at the Carnegie Moscow Center. Interview with the author, Moscow, Russian Federation, June 12, 2013.

David Jones, former Special Assistant to INF treaty negotiator Ambassador Glitman.

Interview with the author, May 7, 2014.

Pavel Palazhchenko, former interpreter for Mikhail Gorbachev and Eduard Shevardnadze.

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Roland M. Timerbaev, Ambassador Extraordinary and Plenipotentiary, participant in numerous treaty negotiations. Interview with the author, June 8, 2013.

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Rozanne Ridgway, former Assistant Secretary of State for European Affairs. Interview with the, June 3, 2015.

Valentin S. Kuznetsov, Vice-Admiral (retired), former Chief of the International Treaties Department of Defense of the Russian Federation (1997-2002). Interview with the author, Moscow, Russian Federation, June 14, 2013.

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William Burns, Major General (retired), Joint Chiefs of Staff representative to the INF negotiations 1981-1986, Principal Deputy Assistant Secretary of State for Political Military Affairs responsible for INF issues, 1986-1987. Interview with the author, May 15, 2015.